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The Nebraska State Medical Journal

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Luhman, F. W., Pender.
Lutton, J. D., Laurel.
Maxwell, C. H., Dakota City.
Newton, R. A., Walthill.
O'Connell, J. M., Ponca.
Frank A. Paden, Hartington.
Peters, G. E., Randolph.
Phillips, C. L., Dixon.
Richards, R. C., Newcastle.
Simon, P. F., Wayne.
Talboy, W. R., Newcastle.
Tellsen, C. C., Wynot.
Weyer, S. M., Wakefield.

CHASE-DUNDY-HAYES-HITCHCOCK

Armitage, A. E., Haigler.
Brown, L. E., Stratton.
Carlson, C. R., Imperial.
Fellers, A. B., Palisade.
Hoffmeister, G., Imperial.
Krampert, F. L., Imperial.
Lewis, N. H., Benkleman.
Premer, J. F., Benkleman.
Stewart, W. E., Stratton.

CHEYENNE

Mockett, P. C., Kimball.
Pankan, J. B., Dalton.
Roche, R. E., Sidney.
Sloan, W. T., Potter.
Sucgang, F. P., Bushnell.
Taylor, J. R., Sidney.
Zarbaugh, G. F., Dalton.

CLAY

Asa, O. C., Ong.
Harvey, E. A., Fairfield.
Keith, C. W., Edgar.
Latta, J. O., Clay Center.
Seely, H. H., Harvard.
Stone, J. G., Sutton.
Thomas, W. M., Edgar.
Welch, J. M., Sutton.

COLFAX

Eby, Chas. D., Leigh.
Kavan, W. J., Clarkson.
Kolouch, F. G., Schuyler.
Koory, S. B., Schuyler.
McGowan, P. H., Schuyler.
Novak, F. W., Howells.
Sixta, L. H., Schuyler.
Vosika, F. G., Clarkson.

CUMING

Anderson, Albert W., West Point.
Chapman, L. F., West Point.
Francis, H. W., Bancroft.
Heacock, F. M., Bancroft.
Kiefer, J. J., West Point.
Morse, Marie H., Wisner.
Pierson, C. A., Beemer.
Riley, L., Wisner.
Riley, W. K., Wisner.
Thompson, I. L., West Point.

CUSTER

Amick, C. G., Loup City.
Bryson, R. D., Callaway.
Burnham, F. A., Arnold.
Carothers, Paul H. J., Broken Bow.
Davies, J. F., Callaway.
Downing, A. R., Merna.
Forney, L. W., Mason City.
Higgins, R. P., Ansley.
Hille, R. W., Arcadia.
Johnson, E. G., Broken Bow.
Johnson, Henrietta, Broken Bow.
Kalar, J. R., Anselmo.
D. B. Kantor, Sargent.
Koefoot, Theo. H., Broken Bow.
Matthews, A. L., Callaway.
Morrow, J. H., Merna.
Mullins, C. L., Broken Bow.
Pennington, G. E., Broken Bow.
Rydberg, C. A., Litchfield.
Spivey, C. F., Anselmo.
Talbot ,R. C., Broken Bow.
Wanek, A. E., Loup City.

DAWSON

Anderson, Arthur, Lexington.
Birkofer, W. J., Gothenburg.
Dunseth, G. O., Bartlesville, Okla.
Easton, R. H., Eustis.
Edmonds, C. W., Sumner.
Fochtman, L. H., Cozad.
Harvey, H. M., Gothenburg.
Johnson, W. T., Gothenburg.
Kile, J. B., Eddyville.
Liggitt, John M., Farnam.
McMeekin, Hugh, Overton.
Moore, M. S., Los Angeles, Calif.
Olsson, Justus E., Lexington.
Reeves, A. E., Farnam.
Sheets, C. H., Cozad.
Stevenson, E. C., Gothenburg.
Wycoff, Roy S., Lexington.

DODGE

Block, D. M., Arlington.
Buchanan, A. E., Fremont.
Byers, G. A., Snyder.
Byers, C. R., Fremont.
Davies, R. A., Arlington.
Davies, W. J., Fremont.
Devries, J. S., Fremont.
Fosser, A. O., Fremont.
Finnegan, T. J., North Bend.
Golding, D. G., Santa Monica, Calif.
Harvey, Andrew, Fremont.
Haslam, G. A., Fremont.
Hauser, B. B., Hooper.
Heine, C. D., Hooper.
Heine, W. H., Fremont.
Hoff, A. E., North Bend.
Hustead, E. L., Scribner.
Kenney, B. V., Dodge.
Kruger, K. E., Dodge.
Metzinger, J. J., Fremont.
Meyers, H. D., Howells.

Moore, C. G., Fremont.
Morrow, H. N., Fremont.
Pedersen, H. C., Fremont.
Preston, S. A., Fremont (deceased).
Putnam, Lynn J., Fremont.
Pyle, B. W., Scribner.
Reeder, Grant, Fremont.
Stuart, A. E., Cedar Bluffs.
Van Metre, R. T., Fremont.

FILLMORE

Albertson, Mirianne A., Fairmont.
Ashby, A. A., Fairmont.
Bixby, J., Geneva.
Hartford, T. J., Ohiowa.
Hickman, J. C., Geneva.
Padlesak, James J., Exeter.
Smrha, V. V., Milligan.
Stansberry, Don C., Geneva.
Stratton, A. B., Exeter.
Wiggins, Carrol W., Shickley.
Wiggins, W. S., Exeter.

FRANKLIN

Campbell, R. B., Franklin.
Devers, W. I., Upland.
Dugan, W. F., Campbell.
Nail, F. E., Riverton.
Neville, D., Hildreth.
Packwood, W. E., Riverton.
Smith, H. C., Franklin.
Sparks, M. L., Bloomington.

FURNAS

Bratt, Mary, Arapahoe.
Green, Ralph D., Beaver City.
Kee, A. L., Cambridge.
Miller, W. C., Arapahoe.
Minick, C. E., Cambridge.
Murphy, H. R., Wilsonville.
Pierce, R. V., Holbrook.
Shank, F. W., Oxford.
Smith, Don L., Wilsonville.
Stewart, B. F., Cambridge.
Weld, M. G., Edison.

GAGE

Bradley, C. A., Beatrice.
Brown, H. R., Beatrice.
Buckley, F. W., Beatrice.
Burford, J. A., Beatrice.
Curry, Chas. S., Beatrice.
Davis, D. D., Liberty.
Elias, Francis, Wymore.
Fall, C. P., Beatrice.
Gillespie, P. L., Beatrice.
Hepperlen, H. M., Beatrice.
Judd, J. H., Beatrice.
Lee, A., Pickrel.
Leibee, J. R., Beatrice.
McGirr, J. I., Beatrice.
Noble, R. C., Beatrice.
Penner, H. G., Beatrice.
Penner, L. E., Beatrice.
Pickett, I. N., Odell.
Platz, Ada, Beatrice.
Rice, C. E., Odell.
Roe, G. L., Beatrice.
Rush, W. A., Beatrice.
Schowengerdt, F. F., Corland.
Skinner, A. O., Beatrice.
Thomas, Chas. W., Wymore.
Tucker, James C., Beatrice.
Waddell, J. C., Beatrice.
Waggoner, J. T., Adams.
Warner, E. A., Blue Spring.
Wildhaber, W. T., Beatrice.

HALL

Arrasmith, W. J., Grand Island.
Arrasmith, W. W., Grand Island.
Condon, F. J., Grand Island.
DeMay, G. H., Grand Island.
Dodd, S., Cairo.
Farnsworth, E. E., Grand Island.
Gelow, J. E., Grand Island.
Gillespie, P. B., Grand Island.
Higgins, J. E., Grand Island.
Hombach, W. H., Grand Island.
Hubbell, A. T., Wood River.
Johnson, E. G., Grand Island.
Linn, E. E., Grand Island.
McGrath, B. R., Grand Island.
McGrath, W. D., Grand Island.
Phelan, L., Grand Island.
Piersol, M. R., Cairo.
Raynor, W. J., Burkett.
Reilly, John V., Grand Island.
Roeder, Geo., Sacramento, Calif.
Ryder, Frank D., Grand Island.
Sawyer, R. E., Doniphan.
Synhorst, A. P., Grand Island.
Triplett, T. M., Grand Island.
Watson, E. A., Grand Island.
Wengert, H. C., Grand Island.
Woodin, J. G., Grand Island.
Woodruff, R. C., Grand Island.

HAMILTON

Haughey, I. W., Ft. Collins, Colo.
Hustead, C. D., Aurora.
Kostal, A. A., Giltner.
Steenberg, Donald B., Aurora.
Steenberg, E. A., Aurora.
Steenberg, E. K., Aurora.
Troester, F. M., Hampton.
Weaver, R. L., Marquette.
Woodard, J. M., Aurora.

HARLAN

Bartlett, W. C., Alma.
Campbell, J. N., Stamford.
Cummings, J. F., Alma.
Gardner, A. J., Orleans.
Kerr, Robert H., Alma.
Rogers, D. R., Ragan.
Rundle, W. G., Orleans.
Talcott, V. V., Republican City.

HOLT-BROWN-DAWES-BOYD, ROCK, CHERRY

Brown, J. P., Stuart.
Broz, J. S., Rushville.
Carter, L. A., O'Neill.
Compton, A. N., Valentine.
Crawford, W. H., Rushville.
Douglas, W. J., Atkinson.
Dwyer, E. H., Gordon.
Finley, W. F., O'Neill.
French, O. W., Page.
Gill, James W., Chambers.
Gilligan, J. P., O'Neill.
Griot, A. J., Chadron.
Griot, Geo. A., Chadron.
Ira, Guy B., Lynch.
Johnson, Chester, Valentine.
Kriz, R. E., Lynch.
Lawson, Thos. J., Ainsworth.
Lear, W. D., Springview.
Lewis, Alfred, Valentine.
Limburg, J. L., Spencer.
McKee, Neil P., Atkinson.
Oxford, E. J., Chambers.
Rasck, Alfred G., Ainsworth.
Remy, G. O., Ainsworth.
Richards, B. F., Crawford.
Root, Chas. H., Bassett.
Sterling, M. B. C., Burton.
Sturdevant, C. L., Atkinson.
Tische, James M., Wood Lake (deceased).
Vennemann, F. W., Lynch.
Wislon, F. L., Stuart.
Zimmerman, C. F., Naper.

HOWARD

Arnold, Merton O., St. Paul.
Grotham, O., St. Paul.
Hanisch, E. C., St. Paul.
Holm, A .H., Wolbach.
Jones, R. T., Elba.
Nicholson, F. S., St. Paul.
Pedersen, P. M., Dannebrog.
Sturges, C. J., St. Paul.

JEFFERSON

Ainlay, Geo. W., Fairbury.
DuVall, Geo. R., Fairbury.
Harvey, H. A. E., Fairbury.
Heath, G. A., Fairbury.
Hughes, D. O., Fairbury.
Humphrey, H. H., Daykin.
Lynch, G. M., Fairbury.
Lynch, J. H., Fairbury.
Peterson, W. C., Fairbury.
Potter, H. E., Fairbury.
Powell, M. J., Fairbury.
Taylor, J. S., Fairbury.

JOHNSON

Barnes, C. D., Tecumseh.
Conlee, C. C., Cook.
Fitzsimmons, A. P., Tecumseh.
Heilman, W. L., Sterling.
Howard, Sullivan, Elk Creek.
McGleer, E. C., Tecumseh.
Morrill, W. LeRoy Sterling.
Rubleman, Geo. J., Tecumseh.
Turner, J .W., Sterling.
Zeigler, C. H., Vesta.

KEITH-PERKINS

Bell, F. M.
Moore, C. N., Ogallala.
Smith, Clinton H., Big Springs.
Vandiver, H. A., Ogallala.

LANCASTER

Adams, R. B., Lincoln.
Albin, W. L., Lincoln.
Andrews, C. F., Lincoln.
Angle, E. E., Lincoln.
Angle, E. J., Lincoln.
Arnholt, M. F., Lincoln.
Arnold, C. H., Lincoln.
Bailey, B. F., Lincoln.
Bartholomew, P. H., Lincoln.
Becker, W. C., Lincoln.
Black, P., Lincoln.
Bowman, D. J., Lincoln.
Brewe, C. H., Lincoln.
Brewer, M. J., Lincoln.
Brooks, E. B., Lincoln.
Cameron, W. L., Lincoln.
Campbell, W. A., Lincoln.
Carveth, W. M., Lincoln.
Churchill, I. W., Uni. Place.
Colburn, W. O., Lincoln.
Coleman, F. D., Lincoln.
Cook, S. E., Lincoln.
Covey, Geo. W., Lincoln.
Crook, Roy, Uni. Place.
Cummings, E. D., Lincoln.
Curtis, W. L., Lincoln.
Dayton, W. L., Lincoln.
Deppen, E. N., Lincoln.
Eiche, Frederick, Lincoln.
Emerson, C., Lincoln.
Everett, Ernest, Lincoln.
Everett, H. H., Lincoln.
Everett, O. W., Lincoln.
Fahnestock, C. L., Lincoln.
Finkle, B. A., Lincoln.
Flanagan, May L., Lincoln.
Flansburg, H. E., Lincoln.
Frey, E. Elmer, Lincoln.
Furgason, A. P., Lincoln.
Gibson, L. F., Lincoln.
Graham, A. Winifred, Lincoln.
Graham, F. A., Lincoln.
Griffiths, D. G., Lincoln.
Hancock, E. W., Lincoln.
Harms, Chas. W. W., Lincoln.
Hickman, C. C., Lincoln.
Hilton, D. C., Lincoln.
Hohlen, K. S. J., Lincoln.
Hollenbeck, F. B., Lincoln.
Hompes, J. J., Lincoln.
Hornbeck, A. R., Lincoln.
Hummel, R. O., Lincoln.
Johnson, C. C., Lincoln.
Johnson, F. B., Lincoln.
Kail, Carl, Lincoln.
Katskee, E. K., Lincoln.
Knight, L. C., Lincoln.
Lehnhoff, H. J., Lincoln.
Lewis, Geo., Lincoln.
Loomis, J. J., Lincln.
Lovell, A. I., College View.
Lyman, R. A., Lincoln.
McCarthy, T. F., Lincoln.
MacKinnon, A. I., Lincoln.
Mayhew, J. M., Lincoln (deceased).
Mitchell, A. R., Lincoln.
Moyer, T. C., Lincoln.
Munger, Arbor D., Lincoln.
Munger, I. C., Lincoln.
Munger, I. C., Jr., Lincoln.
Neely, J. M., Lincoln.
Olney, R. C., Lincoln.
Orr, H. W., Lincoln.
Owen, L. J., Lincoln.
Ramey, W. N., Lincoln.
Reed, E. B., Lincoln.
Reese, S. O., Lincoln.
Reinbard, O. A., Lincoln.
Reynolds, R. W., Lincoln.
Rickard, W. G., Lincoln.
Rider, E. E., Lincoln.
Rogers, F. L., Lincoln.
Rowe, E. W., Lincoln.
Ryerson, F. R., Lincoln.
Sanderson, D. D., Lincoln.
Smith, A. L., Lincoln.
Smith, Jerome H., Lincoln.
Smith, R. L., Lincoln.
Snipes, J. J., Lincoln.
Speier, Aaron S., Lincoln.
Stapleton, H. B., Lincoln.
Taylor, H. A., Uni. Place.
Taylor, J. D., Uni. Place.
Teal, F. F., Lincoln.
Thomas, J. W., Lincoln.
Thompson, J .C., Lincoln.
Thomson, J. E. M., Lincoln.
Waite, H. H., Lincoln.
Walker, G. H., Lincoln.
Warner, Ruth, Lincoln.
Webb, Adin H., Lincoln.
Wegner, E. S., Lincoln.
Welch, J. S., Lincoln.
Whitham, Roy A., Lincoln.

Wiedman, Earl C., Lincoln.
Williams, B. F., Lincoln.
Williams, J. P., Lincoln.
Wilson, W. H., Lincoln.
Woodward, J. M., Lincoln.
Wright, Frank T., Lincoln.
Zemer, S. G., Lincoln.

LINCOLN

Ames, M. A., North Platte.
Anderson, Jorl, North Platte.
Clark, Harvey, North Platte.
Dent, Geo. B., North Platte.
Fetter, Earl W., North Platte.
Heider, Chas. F., Sutherland.
Kennon, C. E., Maxwell.
Kerr, T. J., North Platte.
McGraw, H. G., Tryon.
Morris, Geo. H., Oshkosh.
Newman, J. C., Wallace.
Platt, O. R., North Platte.
Ostling, Evert H., Lewellen.
Redfield, J. B., North Platte.
Richardson, S. T., Hershey.
Russell, R. S., Sutherland.
Sadler, W. W., Hershey.
Schneider, A. L., Henderson.
Schock, A. A., McFadden, Wyo.
Scofield, H. B., Wellsfleet.
Selby, Claude A., North Platte.
Stevenson, Ed., North Platte.
Walker, H. H., North Platte.
Wurtele, F. J., North Platte.

MADISON-STANTON-PIERCE-ANTELOPE-KNOX

Allen, S. G., Stanton.
Allerton, Perry, Tilden.
Barr, C. C., Tilden.
Barry, Augustus, Norfolk.
Bennie, J. W., Clearwater.
Benthack, Walter, Pierce.
Brauer, S. H., Hoskins.
Bruce, J. J., Madison.
Brush, E. L., Norfolk.
Burrell, R. H., Creighton.
Campbell, S. A., Norfolk.
Carrig, M. H., Norfolk.
Charlton, G. E., Norfolk.
Clark, W. K., Valentine.
Courshon, A. J., Chadron.
Craft, W. T., Pierce.
Curtis, E. E., Neligh.
Drummond, C. C., Norfolk.
Emrich, E. L., Massillon, Ohio.
Farner, B., Norfolk.
Fletcher, D. L., Orchard.
Fletcher, T. W., Orchard.
Frary, R. A., Stanton.
Frink, Frank L., Newman Grove.
Gadbois, A. E., Norfolk.
Graham, W. W., Elgin.
Green, Carl, Niobrara.
Hansen, Geo. M., Madison.
Harrison, U. S., Neligh.
Hoefer, C. A., Wisner.
Hopper, O. C., Stanton.
Howley, A. N., Norfolk.
Jensen, Frank, Newman Grove.
Jensen, J. P., Plainview.
Johnson, L. A., Plainview.
Johnson, R. E., Wausa.
Kindred, H. L., Meadow Grove.
Long, F. A., Madison.
McClelland, E. E., Jr., Elgin.
MacNamara, R. B., Crofton.
Maillard, A. E., Osmond.
Melerian, H., Plainview.
Morris, H. G., Newman Grove.
Mullong, C. R., Norfolk.
Nelson, Lloyd L., Norfolk.
Nielsen, J. C., Norfolk.
Nye, F. H., Plainview.
Palmateer, H. R., Madison.
Pollock, F. A., Norfolk.
Reid, John D. Pilger.
Rodgers, C. E., Osmond.
Rudloff, F. X., Battle Creek.
Salter, F. G., Pierce.
Salter, P. H., Norfolk.
Sayre, C. E Norfolk.
Schlumberger, P. R., Oakdale.
Schwedehelm, A. J., Creighton.
Sidwell, Doris M., Santee.
Sonneland, A. M., Norfolk.
Stark, Lucien, Norfolk.
Swift, C .H., Crofton.
Tanner, Ed., Battle Creek.
Tennant, H. S., Stanton.
Young, G. A., Norfolk.

MERRICK

Benton, J. E., Central City.
Boyd, Earl E., Central City.
Brown, A. D., Central City.
Elwood, L. W., Silver Creek.
Fouts, Frederick, Central City.
Glatfelter, Harvey E., Central City.
Hutchison, J. W., Central City.
Line, T. H., Central City.
Racines, J. Y., Palmer.

NANCE

Balcom, R. D., Genoa.
Cleary, J. A., Fullerton.
Davis, Homer, Genoa.
Johnson, F. W., Fullerton.
King, H. E., Fullerton.
Kirkpatrick, M. E., Fullerton.
Williams, C. D., Genoa.

NEMAHA

Blakely, Nathan H., Auburn.
Cline, Edgar, Auburn.
Graham, A. C., Nemaha.
Irvin, I. W., Auburn.
Lorance, B. F., Auburn.
Lutgen, C. A., Auburn.
Ramsey, A. J., Auburn.
Smith, B. A., Auburn.
Tyler, E. M., Auburn.
Vance, V. V., Peru.
Wilson, J. S., Johnson.

NUCKOLLS

McMahon, Chas. G., Superior
Mitchell, W. F., Superior.
Nelson, W. H., Ruskin.
Nelson, William N., Hardy.
Trowbridge, J. A., Superior.

OMAHA-DOUGLAS

Adams, W. J., Omaha.
Allen, J. F., Omaha.
Allingham, H. T., Omaha.
Anderson, Harley E., Omaha.
Anderson, M. C., Omaha.
Anderson, W. N., Omaha.
Bantin, C. F., Omaha.
Bantin, E. W., Omaha.
Baptist, J., Omaha.
Barnhardt, E. G., Omaha.
Barry, M. W., Omaha.
Bean, F. J., Omaha.
Beck, F. O., Omaha.
Bennett, A. E., Omaha.
Best, R. R., Omaha.
Berry, W., Omaha.
Betz, W. H., Omaha.
Bleick, L. C., Omaha.
Bliss, R. W., Omaha.
Boler, T. D., Omaha.
Borghoff, J. A., Omaha.
Brandt, Emelia, Omaha.
Bridges, E. L., Omaha.
Bridges, W. O., Omaha.
Brown, A. J., Omaha.
Brown, C. P., Omaha.
Burns, B. C., Omaha.
Bushman, L. B., Omaha.
Callfas, W. F., Omaha.
Campbell, P. T., Omaha.
Cassidy, W. A., Omaha.
Chaloupka, J. G., Omaha.
Christie, Burton W., Omaha.
Clarke. F. S., Omaha.
Clark, G. L., Omaha.
Cloyd, A. David, Omaha.
Cloyd, Augustus D., Omaha.
Condon, Albert P., Omaha.
Conlin, Frank M., Omaha.
Connolly, E. A., Omaha.
Cook, L. J., Omaha.
Cross, Clara, Omaha.
Crummer, LeRoy, Omaha.
Cuscaden, Gertrude, Omaha.
Davis, Byron B., Omaha.
Davis, Edwin G., Omaha.
Davis, Herbert H., Omaha.
Davis. J. C., Jr., Omaha.
Davis, W. M., Omaha.
Davis, W. W., Omaha.
DeLanney, L. A., Omaha.
DeStefano, C., Omaha.
Dishong, G. W., Omaha.
Dodge, Roy A., Omaha.
Dow, Andrew G., Omaha.
Duffy, Francais M., Omaha.
Duncan, J. W., Omaha.
Dunn, Arthur D., Omaha.
Dunn, F. Lowell, Omaha.
Dwyer, J. R., Omaha.
Edgington, Avington A., Omaha.
Eldredge, R. B., Omaha.
Ellis Paul H., Omaha.
Emmert, Max, Omaha.
Endres, G. L., Omaha.
Erman, Jacob M., Omaha.
Evans, Edward B., Omaha.
Ewing, Ben H., Omaha.
Fairchild, Nora M., Omaha.
Farrell, Robt. F., Omaha.
Faulk, Fred W., Omaha.
Findley, Palmer, Omaha.
Fitzgibbons, Henry M., Omaha.
Fitzsimmons, A. W., Omaha.
Foltz, C. B., Omaha.
Ford, Michael J., Omaha.
Fouts, R. W., Omaha.
Frandsen, Chas., Omaha.
Freymann, J. J., Omaha.
Gardner, J. F., Omaha.
Gerald, H. F., Omaha.
Gerrie, Wallace A., Omaha.
Gifford, Harold, Omaha.
Gifford, Sanford R., Omaha.
Gilbert, G. R., Omaha.
Gilmore, Robt., Omaha.
Gleeson, John J., Omaha.
Goodrich, Guy W., Omaha.
Greenberg, Abraham, Omaha.
Greenberg, Ben., Omaha.
Grier, M. E., Omaha.
Grodinsky, Manuel, Omaha.
Hall, B. W., Omaha.
Hall, Lynn T., Omaha.
Hamilton, Herschel P., Omaha.
Hamilton, Howard B., Omaha.
Haney, W. P., Omaha.
Hanisch, L. E., Omaha.
Hardy, C. C., Omaha.
Haslam, T. P., Omaha.
Heagey, Francis W., Omaha.
Hellwig, John W., Omaha.
Henry, Edwin C., Omaha.
Henske, J. A., Omaha.
Herrmann, W. W., Omaha.
Heumann, J. M. F., Omaha.
Hickey, C. W., Bennington.
Hirschman, Herman, Omaha.
Hoffman, O. L., Omaha.
Hollister, R. R., Omaha.
Holovtchiner, E., Omaha.
Hoest, John, Omaha.
Hotz, Harley, Omaha.
Houlton, T. L., Omaha.
Howard, M. C., Omaha.
Hull, C. A., Omaha.
Hunt, Katherine M., Omaha.
Hyde, John F., Omaha.
Impey, Chester C., Omaha.
Iwerson, J. C., Omaha.
Jahr, Herman M., Omaha.
James, C. S., Omaha.
Jefferson, Alfred, Omaha.
Jenkins, Harry J., Omaha.
Johnson, Aldis A., Co. Bluffs, Ia.
Johnson, A. C., Omaha.
Johnson, H. F., Omaha.
Johnson, Julius A., Omaha.
Jonas, August F., Omaha.
Jones, Wesley, Omaha.
Joyner, Nevill, Omaha.
Kadavy, G. J., Omaha.
Kani, Mantz A., Omaha.
Keegan, John J., Omaha.
Kelley, Ernest, Omaha.
Kelley, James F., Omaha.
Kennedy, C. R., Omaha.
Killins, W. A., Omaha.
Kinyoun, F. H., Omaha.
Kleyla, Jno. R., Omaha.
Koening, Margaret W., Waterloo.
Koutsky, John W., Omaha.
Knode, Archibald R., Omaha.
Korth, Z. N., Omaha.
Kully, B. M., Omaha.
Langdon, J. Frederick, Omaha.
Lathrop, M. E. Omaha.
Lemere, Henry B., Omaha.
Lennox, Geo. B., Omaha.
Levey, Philip, Omaha.
Lindquist, A. B., Omaha.
Lord, John P., Omaha.
Lovely, Frank L., Omaha.
Linkart, Ralph H., Omaha.
Lukovsky, J. F., Omaha.
McArthur, H. J., Omaha.
McCarthy, Joseph D., Omaha.
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CLINIC ON CHRONIC ARTHRITIS*

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The subject that I have chosen for my clinic this morning is one that should be of interest to all practitioners of medicine, namely, Chronic Arthritis. This disease is becoming more prevalent each year, and less attention has been given it than it justly deserves. These poor mortals frequently fall into the hands of quacks and the various cults because medical men do not have patience or interest enough to try and relieve their suffering. It is impossible to treat these cases by merely giving a prescription and some general advice, but requires careful prolonged attention to detail in each individual case. A great deal can be accomplished in some cases of chronic arthritis if we teach these patients the problem that confronts them, and carefully explain to them that nothing can be done unless they are willing to give proper time and attention to detail, also that it may require many months before an ultimate result is accomplished. I believe that these patients should receive instruction in their treatment similar to our diabetic classes, instructing them in all details about their care and management. More convalescent homes and sanitoria are needed to care for these chronic sufferers. Patients that are treated at home frequently become discouraged because the results obtained are very slow, hence often times they try five or six different methods of treatment and thereby lose much valuable time.

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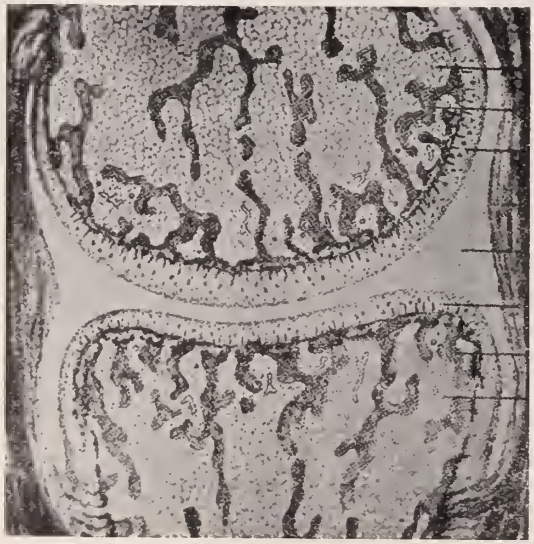
*Clinic given at Nebraska State Medical Association, Hastings, Nebr., May, 1928, by Dr. Adolph Sachs, Professor of Clinical Medicine, Creighton Medical College, Omaha, Nebraska.

Many different classifications of arthritis are given by various text books, but the simplest one is always the best. The classification which I wish to use this morning is the one given by Cecil and Archer in a paper read at the American Medical Association meeting in Dallas, 1926. It is represented in Chart 1, and is as follows:

1. Proliferative Arthritis:
    a. Chronic Infectious Type.
    b. Specific Arthritis.
    c. True Arthritis Deformans.
2. Degenerative Arthritis:
    a. Arthritis of the Menopause.
    b. Degenerative Monarticular Arthritis.
    c. Senile Arthritis.
3. Gout.
4. Intermittent Hydrops Articulorum.
5. Unclassified.

Most men still follow the excellent pathological classification given by Nichols and Richardson published in 1909. These men systematically studied their cases and clarified the pathology which up to that time was poorly arranged. They divide chronic arthritis into two groups, the proliferative and the degenerative.

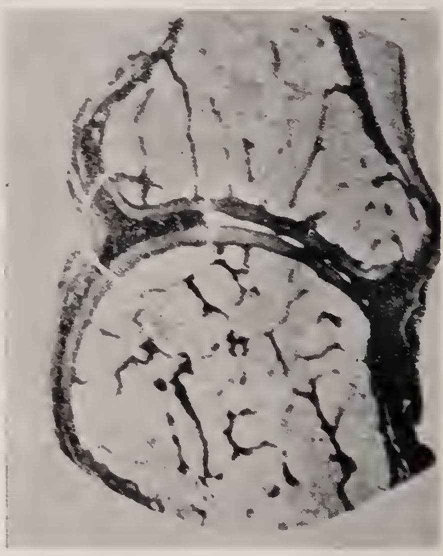


Slide 1. A normal joint. (From article by Nichols and Richardson).

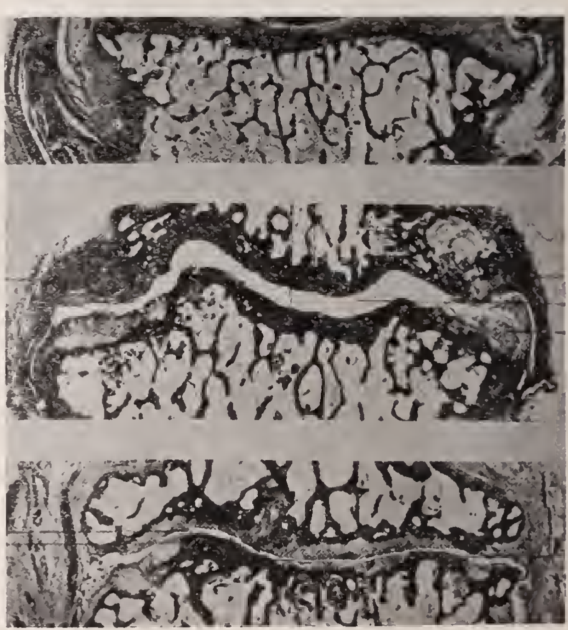
The proliferative group are those which arise from primary proliferative changes in the joints, chiefly in the synovial membrane and the perichondrium. The degenerative group are those which arise primarily as a degeneration of the joint cartilage. These two pathological groups do not correspond to definite etiological factors because the same pathological irritant may at times produce either process.

A normal joint is composed chiefly of the following structures: The joint cartilage, the perichondrium, the joint space, the fat marrow, the trabeculae, the synovial membrane and the fibrous capsule.

Proliferative arthritis occurs much more frequently than the degenerative form. In the proliferative form the proliferation of the capsule produces a layer of fibrous tissue that may extend over the cartilage, and later destroy it, or there may be a proliferation of the fibrous tissue in the marrow, with formation of new blood vessels. This granulation tissue may extend up through the primary zone of calcification and thus

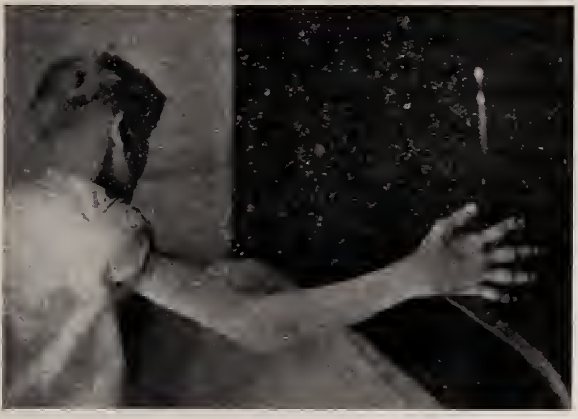


Slide 2. Proliferative Arthritis. (From article by Nichols and Richardson).

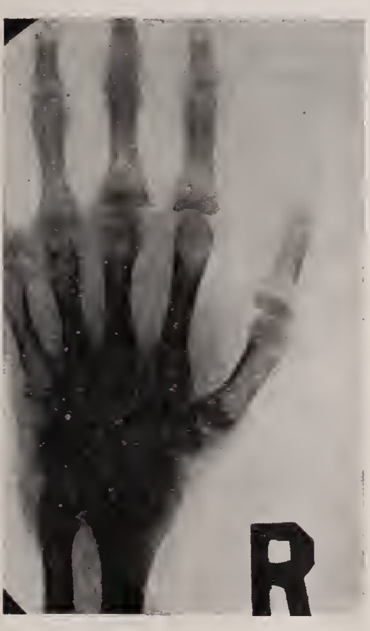


Slide 3. Degenerative Arthritis. (From article by Nichols and Richardson).

rupture through and destroy the cartilage. Fibrous ankylosis is common in this type of arthritis. New cartilage and bone may also be formed from a proliferation of the perichondrium, hence if the process is not checked, fibrous and also bony ankylosis may occur. The primary cause, which is usually some infection, may continue even though all tangible foci have been removed, or the infection may have produced a partial destruction in a joint and this injured joint can continue further destruction by acting as a mechanical irritant, so, if the process is once started, it may continue to act in a vicious circle.



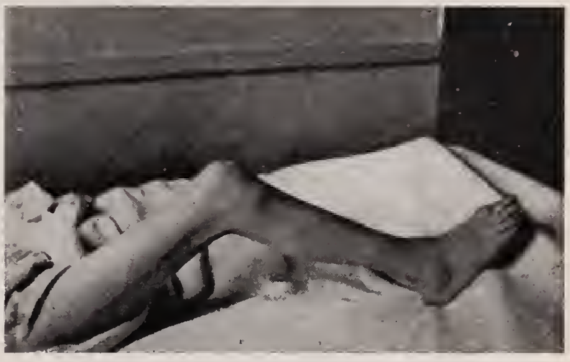
Slide 4. (a) Boy showing fusiform swelling in hands. Proliferative Arthritis.



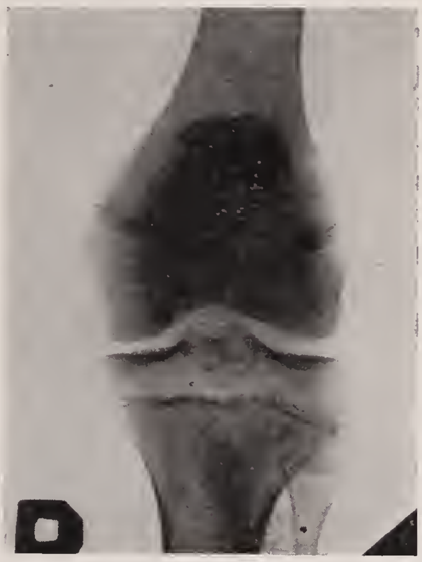
Slide 4. (b) X-ray picture of boy showing fusiform swelling in hands. Proliferative Arthritis.

The x-ray pictures show very little change in the early stage of infectious arthritis because the pathology is mostly in the soft structures. Later, there is a diminution in the joint space, the capsule is thickened, producing a haze and the bone shows an atrophy of disuse. If new cartilage or bone is formed, the changes become more evident. Dislocations and partial dislocations occur as a late finding, hence are of little value in the early diagnosis.

Degenerative arthritis produces a primary degeneration of the articular cartilage, which becomes softened and also eroded, and the exposed bone becomes dense and hardened. This eburnation is common but fibrous changes are less so, therefore, ankylosis is rarer in this form than in the proliferative arthritis. Lipping and exostoses are frequent in degenerative arthritis, hence the x-ray pictures usually show more than in the proliferative form.



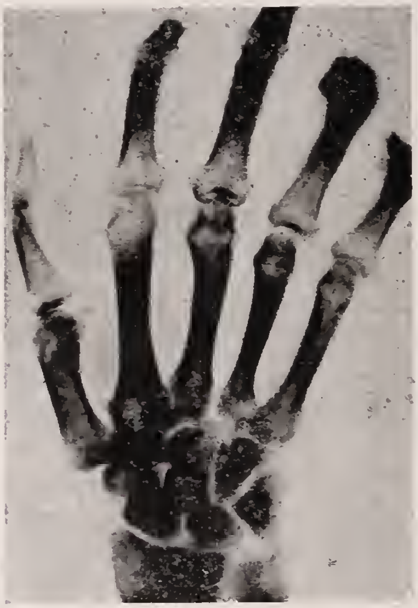
Slide 5. (a) Knee of same boy as Slide 4. Fusiform swelling of knee. Proliferative Arthritis.



Slide 5. (b) X-ray picture of boy showing fusiform swelling of knee. Proliferative Arthritis.

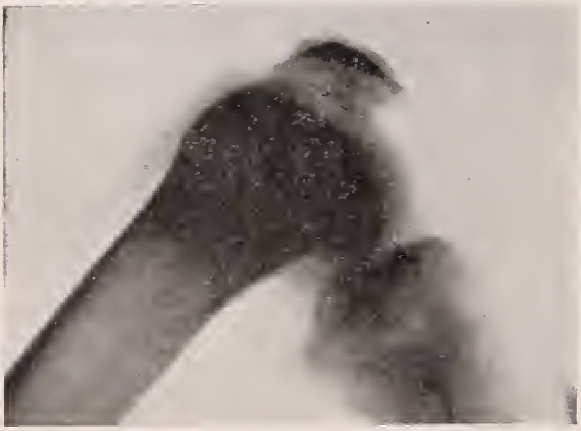
I have a number of cases that I wish to show this morning, however, I believe that I will briefly describe the different types of arthritis, then later take up the individual cases and also show a few lantern slides.

The chronic infectious group is also known as the focal infection type of arthritis, because it is this group that can more easily be traced to some focus of infection. Please remember that I am not speaking of acute rheumatic fever, but of a chronic infectious arthritis.



Slide 6. X-ray on hand of an advanced case of Proliferative Arthritis.

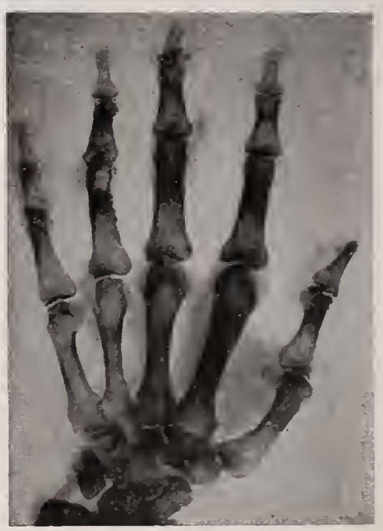
This type of arthritis occurs more frequently in young individuals. It is often encountered in children and most commonly found in young adults from 25 to 35 years of age. Females are more prone to have it than males. The most common cause is some focus of infection, but patients often attribute their illness to exposure or even some trauma. Trauma may occasionally precede an attack of this chronic malady, however, a history of tonsillitis or some infection usually accompanies it.



Slide 7. X-ray of knee of same case as Slide 6. Proliferative Arthritis.

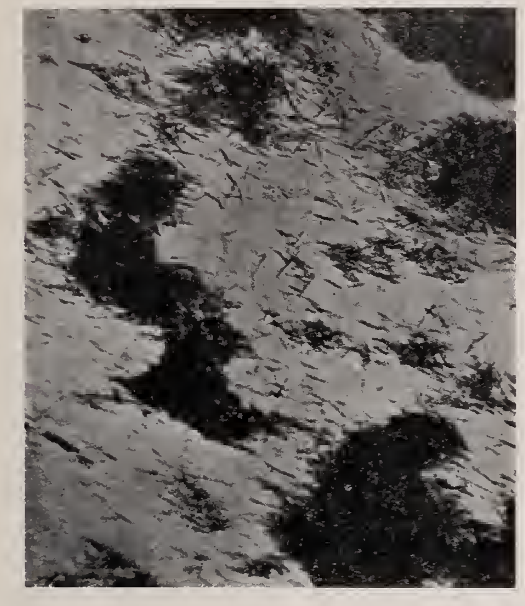
Chronic infectious arthritis occurs in attacks with exascerbations and remissions until later permanent deformity results. It may come on suddenly with fever and other acute symptoms, or the onset may be gradual. It is usually a progressive disease, however, a patient may have several attacks and then the process becomes checked, but usually some permanent deformity remains. Fibrous ankylosis occurs and occasionally by proper orthopedic treatment, these may be broken up, especially in the larger joints. The x-ray findings were previously described, and I will later show some of them on the screen.

The fingers, knees and shoulders are the joints most frequently affected. The disease may be migratory at first, but later the joints are permanently injured. The fingers show that characteristic fusiform swelling which involves the second joint and is so characteristic of the disease. This form of arthritis may be quite painful, but often stiffness or tenderness may be the patients' only complaint. When ankylosis occurs it usually appears during the second or third year, and at first is fibrous, but later may become bony.



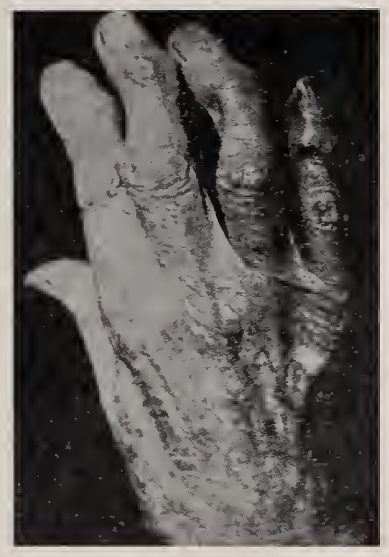
Slide 8. X-ray picture showing bony change in case of gout. (Barr).

The tonsils and teeth are the most common foci, but the prostate, the gallbladder, the appendix, the colon and the cervix may likewise act as foci of infection. In my experience sinuses may be a focus but less so than I see reported by other men. If a patient has a frank sinus abscess, then wonderful relief is obtained, but chronic sinuses that are drained have not given my patients the desired relief that is often hoped for. Dead teeth are often a focus even though the x-ray is negative. The streptococcus hemolyticus and the streptococcus viridans are the organisms most frequently found.



Slide 9. Sodium biurate crystals from tophi in case of gout.

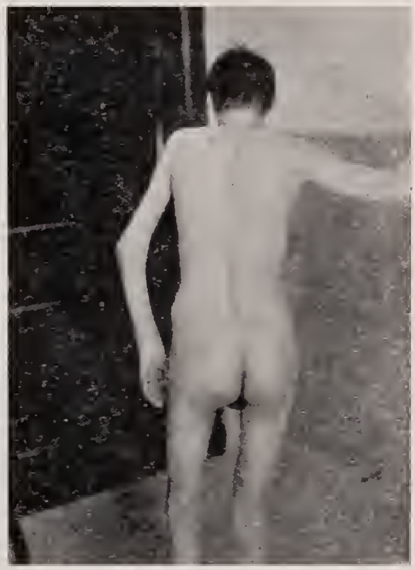
The patients often show a secondary anemia, and some may be debilitated, but others may show a little or no effect from their recurring arthritic attacks. Valvular heart lesions are not frequently found in this type of arthritis.



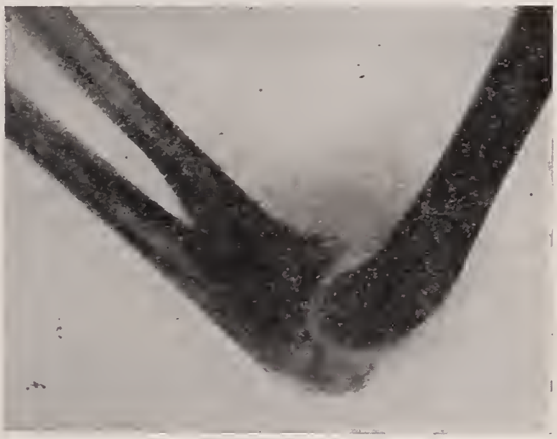
Slide 10. Senile Arthritis. (Nichols and Richardson).

The specific arthritis is divided into the gonococcus arthritis, tuberculous arthritis, syphilitic arthritis, pneumococcus arthritis, etc. Gonorrheal arthritis attacks both the larger and the smaller joints. The sterno-clavicular joints are more frequently involved in gonorrheal arthritis than in other forms of infectious arthritis. The complement fixation test for gonorrhea is occasionally a valuable aid in making a differential diagnosis in these cases.

Poncet rheumatism is a form of arthritis that is seen in tubercular patients, and I will show a lantern slide of such a patient later. Other forms of tuberculous arthritis is a subject in itself, and will be omitted in this clinic.



Slide 11. Case of Poly-Arthritis in a tubercular patient, so-called Poncet Rheumatism.



Slide 12. X-ray of elbow joint, same case as Slide 11. Poncet Rheumatism.

Syphilitic arthritis may occur with secondary or tertiary lues. It may be caused by an extension of a specific periostitis into the synovial membrane or it may start directly as a synovitis.

Another form is the gummatous osteo-arthritis, which usually accompanies a gummatous osteomyelitis with extension of the combined proliferative and destructive process into the joint surfaces, and articular cartilages. The tabetic arthropathy, or Charcot joint is familiar to most of you, and is that characteristic large swollen and painless joint which is easily diagnosed; however, occasionally it is not recognized and hence may be grossly maltreated. Luetic joints, as a rule, offer little difficulty in diagnosis because some other luetic manifestation is usually present. Most clinics now run routine Wassermann's on all patients, which is also a valuable diagnostic adjunct.

Arthritis deformans is merely an advanced type of infectious arthritis. These cases usually have had their foci removed but the process progresses. The temporomaxillary joint is frequently involved and ankylosis of this joint may occur. This is an unfortunate complication because it often interferes with the nourishment of the patient. Arthritis deformans occurs in young adults, but more commonly in persons around 40 years of age. The process becomes so marked that subluxations and marked deformities occur. It is a polyarthritis, and seems to be constantly progressive. This is the type of hopeless cripple that is resistant to all therapy. Orthopedic relief is also sadly wanting. It is often known as rheumatoid arthritis, and may be very painful for years and years. Some cases have marked deformities with ankyloses and also considerable atrophy of the muscles. It occasionally is called atrophic arthritis. Some cases have marked deformities with less pain, complaining only of a great stiffness, especially in the early morning hours. The hands, knees, elbows and feet are most frequently involved. These are the poor mortals that will tax your ingenuity to keep them comfortable and to keep them from wasting their finance on various forms of baths, and quack remedies as a cure. Much can be done if patience and perseverence is kept in mind. They are the same as a diabetic, and they must be taught their limitations and possibilities.

Slide 13. X-ray of hip joint. Same case as Slide 11. Poncet Rheumatism.

Spondylitis is a serious form of infectious arthritis, and most frequently attacks the cervicle and dorsal spines. The severe cases, however, attack the whole spine and they are commonly called "poker backs." Senile arthritis is more prone to attack the lumbar spines, and rarely the cervical or dorsal spines; hence, this often is a valuable point to be remembered in our differential diagnosis. Spondylitis may be found alone, or associated with marked deformity in other joints.

Degenerative arthritis is found in older individuals, usually around the menopause in women, or after the age of 45, in men. There is no set rule that one can follow for occasionally we can find a proliferative and degenerative arthritis in the same individual. The degenerative form is usually a slower process and less painful than the proliferative form, and it occurs with other stigmata of degeneration, namely, arterio-sclerosis, myocarditis, gray hair, obesity, arcus-senilis, etc. They are often physiologically older than their years. Foci of infection have little or nothing to do with this type of arthritis and often needless surgery is performed without any relief. Removal of foci may take off an extra load from the individual, but it seems to bear no definite relationship to the arthritis. There may be some toxic agent, disturbance of internal secretion or some metabolic unbalance, which may later explain the etiology of this disease.

Arthritis of the menopause is the most common form of this type of arthritis and is given as the second most common of all forms of arthritis. It is found in middle-aged women about the time of menopause. They are usually overweight, and are classed by Hench as a Static arthritis. The knees are most commonly affected and the patients will often tell you of their knees creaking. They complain of stiffness and some aching, but the pain does not occur in progressive attacks, as in proliferative arthritis. The cartilage becomes thin and lipping or spur formation is common. Their joints may seem to lock, but no large amount of fibrous ankylosis occurs. They may have a swelling of the first phalanx of the hands in form of Heberden's nodes, but the second phalanx is rarely, or never affected. The knees, lumbar vertebrae and feet are more frequently involved than the hips or shoulders.

Morbus Coxae Senilis is a form of degenerative arthritis that most frequently attacks the hip, however, a shoulder or knee may occasionally be involved. This type of arthritis occurs more frequently in males than females, and often times a history of an injury is obtained in these cases, which may have some bearing as an etiological factor. They must be differentiated from infectious arthritis, also tubercular hip disease, but rarely any difficulty is encountered in differentiating them. There is considerable lipping and destruction of the articular cartilage in these cases.

Senile arthritis is a form of degenerative arthritis and as the name implies, occurs in elderly individuals, the average age being sixty-five, or over. It is more frequently found in women than in men. It may attack any joint, the knees, the feet, the shoulders and often the lumbar spine. Occasionally the only joints involved are the distal phalanxes in the form of Heberden's nodes. The onset is insiduous and removal of foci has no apparent effect on them.

Gout is a form of arthritis that should be classed by itself because it is a definite metabolic disease which is characterized by an excess of uric acid in the blood. It occurs more frequently than most men realize, and we should constantly bear it in mind in our differential diagnosis. The normal uric acid content of the blood, is 1-3 mgms. per 100 cc., and we know one of the earliest signs of nephritis is a retention of the uric acid in the blood, hence nephritis is not an infrequent complication of this disease. It attacks men more often than women and is most frequently found in people who live to eat. The characteristic attacks occur in the big toe, and are accompanied by showers of uric acid in the urine, and hence the diagnosis is usually easy, but it may also attack the knees and larger joints, when a careful examination must be made. The tophi found in the ears are often a valuable aid in making the diagnosis. If carefully removed, the characteristic crystals of sodium biurate will be found. The x-ray pictures are also characteristic, but usually occur late in the disease, hence are of little value as an early diagnostic factor.

Intermittent hydrops articulorum is another special group of cases that are not often encountered, but are readily recognized. They have recurrent attacks of swollen knees or ankles, and, as the name implies, are a true hydrops. The attack may last a variable time, but usually two or three days, and occur with some pain. The relationship of these cases to infection or heredity has not definitely been determined.

The unclassified group includes all cases not properly placed in the four previous groups.

The treatment of arthritis must be systematic and each case should receive individual attention because no two cases present exactly the same problems. It will often tax your ingenuity to keep these patients from wasting all of their finance during the first few months of their illness, because they are usually advised by some well-meaning friend that the various Springs will be a sure cure for their affliction. They immediately try it and usually come home only slightly or not at all improved, and later become inmates of our various charitable institutions.

I believe that if more sanatoria for chronic diseases were available, more scientific treatment could be obtained, and thus much suffering could be avoided. If proper diagnoses were made in most cases, the patients would at least know about how much they could expect from the various forms of therapy, and less dissatisfaction would occur. Proper education and instruction of these individuals is a valuable asset in their treatment.

In the infectious forms of arthritis all foci of infection should be removed as soon as possible, because the earlier the infection is removed, the more hope there is of accomplishing a permanent result. The late removal of foci is often attended by very little improvement, and hence the removal of foci of infection is erroneously condemned.

The teeth and tonsils are the most frequent portals of infection but careful search should be made for all foci. This is a subject in itself and needs no special discussion this morning. Autogenous vaccines that are made from infected tonsils or teeth are of great value in some cases. Stock vaccines are of less value, but occasionally do some good.

Foreign proteins of various kinds are of decided value if properly used, but must be given systematically and carefully watched. Personally, I prefer typhoid vaccine given intravenously. I usually start with a dosage of 10,000,000 per cubic centimeter, and rapidly increase it to 75,000,000 or more, until the desired reaction is obtained. Some patients are sensitive to this form of therapy and, therefore, it is best to start with a small dose at the beginning. It can be increased according to the individual need of each patient. The injections are given every fifth day, in most cases, and eight injections comprise one course. Several courses are usually required, but occasionally a few injections will arrest the progress of the disease. This treatment must be given at such places where your patients can be controlled and watched, and then little or no danger can result from the same. Careful blood counts and two-hour temperature curves should be made whenever possible. I believe that most men interested in arthritis agree that this form of therapy is to date the most satisfactory. Various forms of protein shock are recommended and each have their advocates.

Youmans and Young added a valuable drug to our treatment of arthritis, namely, amidoxyl. Some cases respond nicely to this form of therapy, and it is especially of value in the relief of pain and muscle spasm. The method by which it relieves or acts is fully described in the literature, and I must refer you to these articles because time will not permit its discussion at this clinic. This form of therapy is undoubtedly of value in some cases, but enthusiasts naturally claim more for it than its final or end results will show.

Mercurochrome and various other dyes have been used, and some beneficial results are reported; however, it should only be used in selected cases and not as a routine treatment.

Malaria has been used in the treatment of these cases, but the secondary anemia produced by it offsets any value that it might have.

The colon may occasionally be the focus of infection in some cases of arthritis, and colon irrigations are at times followed by considerable benefit, if properly given. Careful search for ameba should be made in all cases, and, if found, suitable treatment should be instituted.

Streptococci can be cultured from the stools in some cases and often times skin tests will show that these individuals are sensitive to the various strains of these cultures. Some men claim excellent results from autogenous vaccines in these cases, and it is worth while trying them for occasionally good results will follow. Colon irrigations with implantations of the baccillus acidophilus are also beneficial, but I have not had the excellent results from this form of therapy that other men report.

Gonorrheal vaccines are of decided value in gonorrheal arthritis. Prostate massage and all measures necessary to rid these patients of their infection should be used.

Syphilitic arthritis needs rigid anti-luetic therapy.

Rest, sunlight, physiotherapy and psychotherapy is of value and must be scientifically directed and kept out of the hands of quacks. Systematic massage, passive motion and manipulation to prevent ankylosis are wonderful aids in the treatment of arthritis, and should be directed in a scientific manner. Orthopedists must be consulted in most cases because their advise and help is very valuable.

Various drugs, such as cinchophen, oxyliodid, salicylates and other allied remedies are an aid, but not a cure in arthritis. Tonics are of great value and especially caccodylate of soda.

The treatment of degenerative arthritis should be directed to speed up metabolism because often times it is retarded in these cases. Thyroid extract, ovarian extract, iodides, tonics, physiotherapy, baths, reduction cures, are all of value and must be properly applied. The removal of foci of infection is of little value in degenerative arthritis and needless surgery should be avoided. It occasionally removes an extra load the patient is carrying and hence helps his general health, but does not alter the arthritis in any way.

Women with menopausal or static arthritis frequently have flat feet, and if found, this condition should be corrected.

The diet in arthritis is important because often times meat and eggs are restricted without proper indications. In the infectious form of arthritis, highly nutritious food is essential and any limitation would be a direct injury instead of benefit to the individual. Sensitization to certain foods can be determined by skin tests and if found these foods should be avoided. Low carbohydrate diets of Pemberton should be used only in selected cases, and where special indications warrant the same.

The treatment of gout is mostly diet and elimination. Special baths and other measures previously described are also to be used as indicated.

In summing up the treatment of arthritis I would first recommend that you classify your cases properly, and then treat each case as an individual, rather than a group. Carefully explain to each patient, the problem that confronts them, so that they will not become discouraged and abandon scientific treatment for the various fads.

I wish to acknowledge my indebtedness to Drs. Lothar F. Egen and Dr. George Pinney, who supplied the following cases:

Case 1. Mrs. A. Married. Age 21. One child.

Complaint: Pain and soreness of hands and feet, especially her feet.

Past history: Negative, except for several attacks of tonsillitis.

Present illness: Her arthritis began over three years ago, and has occurred in definite attacks of exascerbations and remissions. Her condition became aggravated after the birth of her child. Her tonsils were removed, which gave her decided relief and later, after removal of some teeth, her condition was further improved. Recently, she has had another exascerbation and the process is still progressive. She complains severely of the soreness in her feet because it interferes with her household duties.

Examination: You can readily see that this patient is anemic, and that her resistance is poor. She shows that characteristic fusiform swelling of the second phalanx in both hands, and also in her feet. This immediately makes the diagnosis easy—a chronic, proliferative arthritis.

Recommendations: This patient has had her disease three years and is still progressive in spite of the fact that her foci have been removed, but she should be encouraged to go on, explaining to her that her process will probaby be of long duration. However, by continuing in a scientific manner, much more can be done than in following haphazard advice. I would recommend forced feeding, high caloric diet, tonics such as iron, caccodylate of soda and cod liver oil. I would also advise sun baths, physiotherapy and other measures previously outlined. I feel that several courses of typhoid vaccine would materially benefit this patient.

Case 2. Miss B. Single. Aged 27.

Complaints: Painful joints, elbows, ankles, knees, wrists and fingers. Stiffness of both elbows, with some ankylosis.

Past history: Negative, except occasional sore throat and usual children's diseases.

Present illness: Her arthritis is of several months' duration and has become progressively worse. On advice of her doctor, all foci are being removed, and the ankylosis has been greatly relieved by manipulation under gas.

Examination: This case again shows the characteristic findings of a progressive, proliferative arthritis, attacking the larger joints, chiefly, but she also has some involvement of her hands.

Recommendation: Same as in previous case. Tonics, physiotherapy, sun baths, typhoid vaccine, etc.

Case 3. Mr. C. Married. Aged 53. Occupation, plasterer.

Complaints: Stiffness of neck.

Past history: Negative, except several attacks of what he termed rheumatism; tonsils removed 2 years ago. Dead teeth removed.

Present illness: Six years ago he started to have trouble with painful joints and later developed stiffness in his neck until at present he is unable to rotate his head. He has improved greatly under treatment and at present is free from symptoms.

Comment: His process is at present quiescent, and he needs no treatment except tonics and supportive treatment to prevent a recurrence.

Case 4. Mr. D. Single. Aged 23. Clerk.

Complaints: Painful joints and stiff back.

Past history: Tonsils removed. Attack of acute rheumatism 3 years ago.

Present illness: Patient has been ailing since his so-called attack of rheumatism three years ago. He had several large joints involved, namely hips, elbows and later his back became stiff. He has had several exascerbations and remissions during this illness. The removal of his tonsils was of no benefit, but the removal of an abscessed tooth with a fistula gave him decided relief. He is greatly incapacitated by the stiffness of his back, but during his periods of remission, does light work.

Examination: You will note that this is a typical case of "poker back", involving the whole spine. Note especially his gait, which is so characteristic of this type of patient.

Recommendation: Continue the search for foci. Vaccine therapy, physiotherapy, etc., and protect him especially from further mechanical injuries.

Case 5. Mrs. E. Married. Aged 67.

Complaints: Deformity of hands and ankles.

Past history: Negative except usual children's diseases, colds, etc. Tonsils removed several years ago, with no benefit derived.

Present illness: This patient noticed her stiffness starting 15 years ago, and has steadily increased until 3 or 4 years ago when it became stationary. She suffers no discomfort, but is annoyed by the stiffness of her hands and feet. No treatment has aided her in the least.

Examination: A typical senile arthritis, with Heberden's nodes.

Treatment: None needed. Occasionally iodides, thyroid, etc., are of some value, as outlined in this paper.

PROGRESS OF SURGERY

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GOITER

Kimball(1), in a rather extensive study of goiter prophylaxis in Michigan, including both children and adults, found excellent results from feeding small quantities of iodine. He studied particularly the question of iodine inducing hyperthyroidism with the conclusion that "there is no basis for the statements that iodized salt might induce hyperthyroidism in long standing goiters."

The evidence at hand of the effect of iodine on experimental hyperthyroidism in animals is confusing. Carson and Dock(2) produced a state of artificial hyperthyroidism in four adult males by the injection of thyroid extract. Iodine had no effect upon this pathologic condition. The results suggest that the therapeutic effect of iodine in hyperthyroidism is produced by its action on the thyroid epithelium.

Tucker(3) reports three cases proving that hyperthyroidism may exist without a visible or palpable goiter. Hyperthyroidism, and not the size of the thyroid, is indication for operation. At operation, the surgeon is often amazed at the size of the gland that is concealed in the soft tissues in the neck. These cases must be diagnosed from myocarditis secondary to arteriosclerosis, incipient tuberculosis, neurocirculatory asthenia, enteroptosis, and acute focal infection. Tucker also states that it is rarely safe to perform a tonsillectomy in the presence of hyperthyroidism. The thyroidectomy should be performed first.

John(4) finds that hyperglycemia with glycosuria is not a rare finding in hyperthyroidism. The degree of hyperglycemia bears no relation to the severity of the hyperthyroidism or to the height of the basal metabolic rate. Thyroidectomy improved the carbohydrate tolerance, mild disturbances of which disappear after operation, while in more severe cases the condition is ameliorated. In these cases the preoperative routine should include a sufficiently high caloric diet with small doses of insulin, in order that glycogen may be restocked in the liver.

Joslin and Lahey(5) have made an extensive study of a large series of cases of diabetes and hyperthyroidism. In 228 cases of exophthalmic goiter there was glycosuria in 38.6 per cent, in 83 cases of toxic adenoma, in 27.7 per cent, but in 189 non-toxic goiters the percentage was only 14.8 which is practically the same as in other types of surgical cases. Surgery greatly ameliorates the diabetes in these cases. The mortality was 4 per cent. The hyperthyroid patient from physiological, pathological, and statistical evidence is somewhat more prone to diabetes than the ordinary individual and for the remainder of his life should be so regarded, whether operated upon or not.

Especially patients with severe reaction may be unable to retain iodine given by mouth or by rectum. At times iodine even if well diluted seems to irritate the larynx. To avoid this, Jackson(6) gives iodine and fluids through a duodenal tube. In severe cases the tube is placed in the evening preceding operation and left in place for a couple of days. He states this procedure has made the post-operative reaction negligible.

Mosser(7), in the light of recent investigation, doubts Plummer's theory as to the effect of iodine on hyperthyroidism. Against this theory he cites the following:

1. The theoretical abnormal substance has not been isolated; its chemical formula is unknown.
2. The theory fails to explain the relapse following an initial temporary improvement when iodine is given to persons with hyperthyroidism.
3. Hyperthyroidism can be constantly produced in the experimental animal by the intravenous administration of normal thyroxin.
4. Administration of iodine has no effect on the course of experimental hyperthyroidism and the involutional change occurs in the gland itself.

In view of this evidence Mosser thinks it is more logical to assume that iodine exerts its effect at the seat of production of the thyrotoxic substance than on the circulating toxin. He experimented on adult dogs and states his theory to explain the action of iodine on the toxic goiter.

1. In the experimental animal iodine stimulates the cells to produce colloid.
2. Colloid retention compresses and flattens the cells of the acini.
3. The same effect occurs from iodine administration in the presence of experimental hyperthyroidism.
4. Prolonged iodine administration to a hyperthyroid animal produces a stage of exhaustion in the gland.
5. The effect of iodine on the normal gland is similar to that in the animal.
6. The effect of iodine on the hyperplastic toxic goiter is similar to that obtained in the normal gland of the dog.
7. After prolonged administration of iodine (3 to 12 months) to the patient with hyperplastic toxic goiter, a stage of exhaustion is noted. This is similar to that produced in the animal by prolonged feeding with thyroid extract and iodine.
8. The clinical status of the patient is not proportionate to the histological picture when iodine has been taken for a longer period.
9. A theory to explain the action of iodine in the patient suffering with hyperthyroidism is presented.

His theory is as follows: "When iodine is first given the cells are stimulated to secrete an excessive amount of colloid. This colloid fills the acini and mechanically compresses the lining cells, thus reducing their secretory power. Less thyroxin is produced, and the patient shows clinical improvement. Gradually the cells adjust themselves to the changed condition and resume their secretory power. The amount of thyroxin is thus again increased and the toxic symptoms increased proportionately. Further iodine medication fails to alter the production of thyroxin, but does continue to stimulate colloid production. After prolonged iodine administration the cells become exhausted, can no longer produce colloid, and on continual iodine stimulation they degenerate. However, even in the stage of exhaustion, they are still quite capable of carrying out their pathological function, i. e., production of excessive amounts of thyroxin. The microscopic picture which is usually interpreted as a specific effect of iodine on the thyrotoxic producing properties of the cells, is in reality the effect of prolonged and excessive colloid production.

GASTRO-INTESTINAL

The debate about the per cent of gastric ulcer which become malignant still goes on and Alvarez and MacCarty(8) give us another report from the Mayo Clinic. They conclude that gastric ulcers larger than a quarter (2.4 cm. in diameter) or carcinomas smaller than that are so rarely seen that the physician with average practice may go several years without seeing one. They found four out of five benign ulcers are smaller than a dime and 92 per cent smaller than a quarter. It is doubtful whether benign ulcers (excluding the gastro-jejunal, the recurrent and the syphilitic) ever grow much larger than a silver dollar. Twenty-three per cent of the carcinomas resected at the Mayo Clinic are within the range of size of benign ulcers. They show that at the Mayo Clinic the fear of temporizing with gastric lesions can hardly be based on wrong diagnosis.

Hinton(9), in 12 cases of perforated duodenal ulcers, excised the ulcer and did a Horsley pyloroplasty and did not perform a gastroenterostomy. The results were disappointing. Of 9 cases followed, only two have remained well, one had a definite recurrence, another a pyloric stenosis which necessitated a gastro-enterostomy, and five were not symptom free. One died and two could not be traced. In view of these findings he does not advise continuing this type of operation.

It has been observed clinically that patients with distended gallbladder or with stone impacted in the cystic duct suffer from respiratory embarrassment during an attack of colic. This symptom has been valuable in making this diagnosis as it is absent or not significantly present in any other abdominal complex. Experiments by Schrager and Ivy(10) have demonstrated that distention of the gallbladder and biliary ducts causes inhibition of respiration, chiefly inspiratory in type. It also produces nausea, vomiting, and distress in proportion to the degree of distention of the biliary passages. Distention of the biliary ducts causes more striking symptoms than distention of the gallbladder alone. These symptoms are to a great degree abolished by section or anaesthesia of the vagi or of the right splanchnic. It was further observed that during the respiratory inhibition caused by distention, the right side of the diaphragm was contracted apparently to serve as a splint.

Ravdin and Morrison(11) found in dogs that cholecystectomy and ligation of the common duct causes a reduction of the plasma chlorides. No reduction occurred after simple ligation of the common duct, or with cholecystectomy alone.

In dog experiments, Steinberg and Goldblatt(12) found that injecting solid feces intraperitoneally produced invariably fatal peritonitis. This was avoided in ten out of eleven dogs by active intraperitoneal immunization with "living" colon bacilli. Killing by heat greatly diminished the antigenic power of colon bacilli.

David and Sparks(13) find that diphtheria toxin passes promptly in considerable amounts directly into the blood stream as well as to the peritoneal lymphatics from the normal peritoneum of the dog. Intraperitoneal transudate favors the prompt passage of diphtheria toxin from the peritoneum. A plastic peritonitis markedly, if not completely, interferes with the passage of diphtheria toxin from the dog's peritoneum. By analogy we may assume as a result of these experiments that when a plastic exudate is formed in the peritoneum the passage of bacteria and toxin from the peritoneum is markedly interfered with. It would seem, therefore, advisable in the treatment of peritonitis to interfere as little as possible with the plastic exudate that is formed, as it can be regarded as a favorable process. Perhaps it is unwise to press the analogy between dog and human peritoneum further, but one would feel from these experiments that in the early hours of peritonitis the factors of absorption of toxins and bacteria into the circulation directly and via the lymphatics was the dominant factor of danger, while later absorption from the peritoneum became less important and local conditions, such as paralytic ileus gained the ascendency in the picture.

In dogs, Haden and Orr(14) studied the blood chemistry in different experimental lesions. General peritonitis causes similar changes as in high intestinal obstruction. Temporary obstruction of the pylorus(15) results in toxemia characteristic of upper gastro-intestinal tract obstruction with diuresis and high nitrogen excretion during the toxemia. This is evidently due to increased protein destruction. Administration of sodium chloride by mouth causes a rapid return of the blood to normal and also results in a cessation of the increased protein destruction. Obstruction at the cardiac end of the stomach(16) caused death in untreated dogs in three days as an average. Three dogs treated with 1 per cent salt solution subcutaneously lived 32, 36 and 45 days, respectively, without developing a toxemia. Two per cent glucose does not alter the course of the toxemia. Concentrated saline in small quantities given directly into the jejunum prevents the marked rise in non-protein nitrogen but does not materially prolong life. Release of the obstruction does not change the course of the toxemia in untreated animals. The subcutaneous injection of 1 per cent salt after release of the obstruction causes a rapid return of the blood to normal and allows the animal to recover. Glucose has no effect on the toxemia.

Proteose intoxication(17) produces no fall in blood chlorides and is probably not a factor in the characteristic fall in chlorides seen after intestinal and pyloric obstruction.

Experimenting on the sphinter ani, Melzner(18) concludes: With a cutting of the sphincter ani without complications, a good postoperative result will follow if it is resutured either primarily or secondarily; or if it heals by primary union. Injury of its spinal nerve on one side causes a weakness of the sphincter, which is without much significance; if bilateral there is a great functional disturbance with atrophy, loss of tonus, and incontinuence.

After many years of experimental work, Coffey(19) now gives us his improved technique of transplantation of ureters into the large intestine.

A valve like action is necessary to prevent an ascending infection to the kidneys. This he obtains by having the ureter run for a distance between muscularis and mucosa of the colon before penetrating the colon. To guard against post-operative oedema closing off the ureter and so producing anuria for a time, he sutures a ureteral catheter into the ureter and this passes out through the anus. Another source of trouble has been post operative peritonitis, the infection coming from the bowel. Dr. Coffey has a very ingenious method to avoid this. After the abdominal incision is made a soft intestinal clamp is placed high on the sigmoid. Then an assistant passes through the anus a sigmoidoscope. At this junction the operator passes a needle through the wall of the sigmoid and irrigates the lower colon so it passes out through the sigmoidoscope. After it is clean the last part of the irrigation is with mercurochrome 1 per cent. Transplantation of the ureters into the bowel is indicated in the following cases:

1. Incurable carcinoma of the bladder, urethra, or prostate for palliative purposes.
2. Advanced carcinoma of the bladder, urethra, or prostate in which it is impossible surgically to remove the growth, but in which it is possible to use radium.
3. Early curable carcinoma as an essential part of the total cystectomy, which may include prostatectomy or hysterectomy.
4. Carcinoma of the urethra.
5. Incurable visicovaginal fistula.
6. Contracted bladder due to scars of ulceration or to other causes.
7. Extensive, incurable, multiple perineal fistulae.
8. Tuberculous ulceration of the bladder in which one kidney remains good, the other to be removed.
9. Traumatic injuries which make the use of the bladder impracticable.
10. Extrophy of the bladder.

GYNECOLOGY

Murphy⁽²⁰⁾ has made a very complete study of the effect of ovarian irradiation on the health of subsequent children. He has carefully reviewed the literature and studied it in three hundrd and twenty human pregnancies. He concludes that irradiation of pregnant animals or human beings is a procedure extremely dangerous to the health of the offspring concerned (61.3 per cent defective), and in the case of human beings ought not to be undertaken unless such existing pregnancies are to be terminated artificially prior to the period of viability of the child. As yet, he says, it cannot definitely be stated that preconception maternal pelvic radium or x-ray radiation is or is not prejudicial to the health of subsequent children.

MISCELLANEOUS

Andrews and Reuterskiold(21) point out that in cases of dehydration insulin gives an enormously exaggerated and prolonged action. As there is often some dehydration post operative, insulin must be used with extreme caution or hypoglycemia will result.

Working with dogs, Padgett and Orr(22) found that from the experimental standpoint the glucose-insulin treatment of shock recently advocated by Fischer seemed to be no more beneficial than treatment with a hypertonic solution of glucose without the insulin or by sodium chloride.

Experimentally, Nikolajeff(23) finds the following histologic changes in the vessel after perarterial sympathectomy. Connective tissue at the operative site, especially in the adventitia, also in the elastic stratum and peripheral part of the media, and considerable atrophy of the muscle element and thinning of the vessel wall. The restoration of the adventitia nerve plexus after the Leriche operation can be observed in normal vessels. Some operations on the veins be considered not only from the standpoint of mechanical changes of the circulation but from the standpoint of a neurotomy.

In abscessed tuberculosis lymph glands, Hedry(24) in 14 cases injected a 10 per cent zinc sulphate-glycerin emulsion. This caused a complete sterilization and obliteration of the abscess cavity in 11, improvement in 2, and no result in 1. Of 6 patients with fistulae 6 were healed and 1 improved. The highest concentration caused no injury to the surrounding healthy tissue and had no cumulative efect.

Oppel(25) considers "endarteritis obliterans" or Buerger's disease is due to hyperactivity of the adrenals. With a very inaccurate test he thinks in this condition there is a hyper-adrenalinemia. For treatment he has removed the left adrenal gland in 130 cases. In the last 70 such operations only two died. After epinephrectomy the results have been good. He also performs this operation in Raynaud's disease with satisfactory results.

Coley(26) states that lymphosarcoma and Hodgkin's disease should no longer be regarded as absolutely hopeless. These tumors are as a rule extremely radio-sensitive and are likewise responsive in a remarkable way to treatment with the mixed toxins of erysipelas and Bacillus prodigiosus. It is logical to use the combined treatment, thereby securing the advantage of the local effect of radiation (radium or roentgen-ray) and the systemic effect of the toxins which have the power to reach hidden and remote glands beyond the reach of radiation. Treatment should be kept up periodically for a number of years. Cases of lymphosarcoma so treated should show a cure or at least complete control of the disease for five years or more in 10 to 15 per cent of cases.

Hodgkin's disease still has a very bad prognosis, and permanent control can be expected in only a very small number of cases.

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PRACTICAL SURGERY—(Continued)

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The Treatment of Intra-Abdominal Lesions Following Contusion of the Abdominal Walls.

The frightful mortality of traumatic intra-abdominal lesions is well recognized, but the contributing cause of the mortality, in importance most potent next to the injury itself, is the hesitancy upon the part of physicians and surgeons to act promptly in cases of this character. Two much valuable time is spent in analyzing symptoms in order to determine in a given case whether or no an intra-abdominal injury has followed a trauma. While the refinements of this analysis of symptoms is progressing, in case a hollow viscus has been ruptured or perforated, the almost inevitable death watch is established. True, in this form of the "Acute Abdomen", as Deaver says of Intestinal Obstruction, "It is better to open the abdomen and find nothing than to open it and find too much."

Falls, kicks, blows upon the abdomen, and the passage over the abdomen of wagons, automobiles, etc., may result in simple contusions of the skin and muscles overlying the abdominal contents, or else in injuries of the liver, spleen, kidneys, stomach, intestines, omentum, or bladder. Sometimes more than one of these is injured at the same time.

RUPTURE OF THE STOMACH AND INTESTINES

The most important intra-abdominal lesion following a contusion of the abdomen is a rupture of the stomach or intestine, because of the highly infectious nature of their contents. Unless recognized within a very few hours a fatal termination is almost inevitable. I know of no positively identifying symptom of this lesion except it be a firmly contracted abdominal wall, thoracic breathing, early and continued vomiting. In case the stomach is ruptured there may be blood in the vomitus. The symptoms of peritonitis are quite positive and develop early, although distention of the abdomen may not appear until late, twelve to twenty-four hours. I recall one case in which most of the symptoms were quite latent, not making themselves positive until the third day. The man died on the fifth day. On post-mortem examination a rent was found in the small bowel which had evidently been incomplete to begin with, but gradually enlarged so as to permit of a general peritoneal infection, in spite of an attempt upon the part of nature to wall off the injured bowel by means of a plastic exudate. Operation was refused.

Another case seen for the first time twenty-four hours after injury, presented all of the symptoms of an approaching fatal termination, yet there was little distention. Death came six hours later. On post-mortem examination, besides a rupture of the great omentum, there was a complete rupture of the small intestine, with free leakage into the peritoneal cavity.

Paget says: "But is there no sign, within the first twelve or twenty-four hours after the injury, to tell whether the intestine is ruptured? Perhaps the most trustworthy signs are: 1. The abdominal wall kept rigid and retracted; at no time soft or moving in respiration, but remaining rigid and concave for a day or longer, and then becoming distended. 2. Persistent hiccough. 3. No improvement in the patient's general condition at the end of twenty-four hours; the initial shock was perhaps not very severe, yet he does not rally from it. 4. Some deep point of extreme tenderness. But these signs may be absent or uncertain. The evidence of internal hemorrhage is sometimes plain enough—the rapid increase of weakness, the rising dullness in one or both lateral abdominal regions; but the evidence of ruptured intestine may be sought most carefully, and sought in vain, till the patient is past saving by operation".

True it is that many things must be considered in each individual case; in one, no doubt would seem to enter into the certainty of an intra-abdominal lesion; in another, serious misgivings as to the justifiability of surgical intervention would be recognized; so it is always wise to weigh well the history of the case and each objective and subjective symptom. The condition of the bowel, whether full or empty, the direction of the blow and the part of the abdomen struck; whether or not the abdominal muscles were rigid, "on guard", all of these points are fully recognized in the mechanics of abdominal injuries. We should always remember, however, that apparently trivial injuries judged by the symptoms produced, may soon be followed by the most fatal consequences, because of sloughing following contusion of the bowel wall or as the result of injury to the mesenteric vessels. I wish to emphasize what I consider one, if not the most important, symptom of injury, and that is rigidity. Hartmann reported ten cases where this sign was marked. Nine were successfully operated upon and distinct lesions found. The remaining case refused operation and died as the result of intestinal perforation. Of seventeen cases without rigidity all recovered without operation.

RETRO-PERITONEAL RUPTURE OF THE INTESTINE

This very rare accident is indicated by shock, pain, early rise of temperature, and the rather rapid formation of an emphysematous, purulent, inflammatory swelling in either loin. This swelling may spread along the lines of least resistance, as any other compound inflammatory gravitation abscess. Early evacuation by suitable incisions is imperative.

ACUTE INTESTINAL OBSTRUCTION FOLLOWING CONTUSION OF THE ABDOMINAL WALLS

Two cases of this kind were operated upon by me in the Clarkson hospital. They were so unusual that they were made the subject of a paper read before the Western Surgical Association.

The paresis of the bowel in one case, a young man who, in a fight, had received several kicks upon the abdomen, was due to an extensive thrombosis of the mesenteric veins of the lower ileum beginning at about one foot from the ileo-caecal valve and extending upwards three or four feet. Along the intestinal border of the mesenterium shot-like bodies were to be felt; the bowel was thickened oedematous, and dark-colored, portraying gangrene. The intestine above the proximal end of the thickened bowel was distended. The abdominal incision had evacuated a large amount of bloody serum whch was almost pocketed in the area of the involved intestine.

The peritoneal cavity was flushed several times with large quantities of hot normal salt solution, resulting in a better appearance in the dark colored bowel. I decided to close the abdomen. The patient recovered, having, however, a much depressed convalescence.

The finding of bloody serum within the abdominal cavity, the red-colored serum not being due to hemorrhage per se, is a rare occurrence in acute disease. A limited ascites indicates intestinal obstruction rather than an acute peritonitis, and when the fluid is a bloody serum an intestinal strangulation may be looked for. Gangolphe encountered a case of obstruction, of uncertain diagnosis; laparotomy gave escape to a considerable amount of serosanguinolent fluid similar to that found in the sac of an ordinary strangulated hernia. On examination the cause of obstruction was discovered in an internal strangulation of the small intestine in the foramen of Winslow. The thrombosed mesenteric veins in my case acted as constrictors, producing the oedema, discoloration, and the serosanguinary exudate. In a case of dynamic obstruction such as this, whether or not the obstruction is a pure paralysis from trauma, or whether the paralysis is secondary to an invasion of microbes permitted to pass through the injured intestinal walls, depends, I think, upon the state of vitality of the intestine.

In intestinal paralysis accompanying acute mesenteric thrombosis there is early a large amount of bloody serum, and in my observation death takes place before the bowel ruptures, although it may be blue-black in color, as was the case in a women when admitted to the county hospital nearly moribund, last month: She lived, unoperated, forty-eight hours after the initial pain. The autopsy disclosed about three feet of the lower ileum blue-black and distended. There was a large amount of bloody serum mostly in the area of the thrombosis.

Case 2: I was called to Greenwood, Nebraska, to operate upon a rugged young man twenty years old, for intestinal obstruction, and saw him in consultation with his physician, Dr. S. J. Miller, and Doctor Kirkpatrick of Ashland, Nebr., eight days after a runaway accident in which the patient had been thrown from a buggy, striking the ground so as to receive contusions of the abdomen and head. The patient's general condition was fair; he, however, vomited whatever was introduced into the stomach, and also bile-stained mucus, which on several occasions was quite dark and bad smelling. Constipation was absolute. Doctor Miller outlined a tumor mass in the right upper abdomen below the ends of the ninth and tenth ribs. Delay was counseled as the pulse and temperature were near normal and there were no evidences of peritonitis. The vomiting increasing and the constipation remaining absolute, the man was sent to the Clarkson hospital for operation. On making an incision over the most prominent part of the swelling, it was disclosed that a large retro-peritoneal hematoma compressed the descending and transverse portions of the duodenum from behind, in one part particularly, so that its walls were flattened one against the other. An incision was made so as to evacuate the hardened clot sufficiently to relieve the compressed duodenum. Recovery was uneventful.

RUPTURE OF THE LIVER OR SPLEEN

One or both, may follow contusions of the abdominal wall. The liver is more commonly ruptured than the spleen, being more inelastic and immobile and in closer relationship with the abdominal wall, in fact it is injured next in frequency to the intestinal tract. This is explained by its size and tissue structure, and its position between the ribs and spinal column, with the diaphragm above. The right lobe is the more commonly involved part, and, except when the rupture is a slight one, hemorrhage and shock is severe. There are general and physical signs of internal bleeding. Movable dullness in the loins indicates a severe and probably fatal hemorrhage. About fifty per cent of the severely injured die. If the signs of hemorrhage are mild and not progressive, my experience is to treat the patient expectantly—absolute rest. In all other instances prompt operation is imperative, with the object of controlling the hemorrhage by tamponade and suture.

RUPTURE OF THE SPLEEN

This injury may follow the same kinds of accidents as cause rupture of the liver, but because of its lessened size, elasticity and more protected position, its rupture is less frequent. This is general experience and a true one. However, it has happened to me that I have seen more cases of rupture of the spleen than of the liver. I have recognized them at least, operating upon a considerable number.

I early mention the treatment because whenever the diagnosis can be positively made there is only one method of action and that is operation. Given the history of an injury, pain, tenderness and more or less rigidity in the left flank with the symptoms of hemorrhage, with some dullness in the left loin—these are an almost positive proof of a rupture of the spleen. If the urine is free of blood, the kidney may be presumed not to be involved. Because of the intimate anatomical relationship of the bowel, stomach, and pancreas, to the spleen, symptoms pointing to this involvement must be considered. The chief danger of a ruptured spleen is hemorrhage, and the index for treatment is early, immediate when practicable, laparotomy. It is a clinical fact, however, that the blood from a ruptured spleen coagulates more rapidly than that from a ruptured liver. This is said to be due to the elasticity of the organ and the large number of leucocytes present. It is because of this tendency to clotting that a relatively late operation is sometimes successful. I recall two contrasting illustrative instances. Doctor Agee of Fremont brought a boy to me, driving in from Valley by automobile, thirty miles, who only several hours before had had a contusion of his left abdominal wall resulting in a rupture of the spleen. The doctor had made the diagnosis. The operation was done soon after the boy arrived at the Clarkson hospital. There was a large amount of free blood in the abdominal cavity, the spleen was badly torn but was removed without much difficulty. The boy died the next day in spite of our best efforts to stimulate him.

THE CONTRASTING CASE

I was called last year to Tekamah to operate upon a woman, the wife of a clergyman who, the day before, had been injured in an automobile accident. She was in a hospital. No diagnosis had been made, but to my mind the evidences of a ruptured spleen were positive; her condition, although serious, yet from an operative standpoint was hopeful. On exploration the abdomen was found to contain a large amount of free blood and many clots, especially in the neighborhood of a badly torn spleen, which was removed. The woman made a safe recovery although she showed the effects of the great loss of blood for a considerable period. Instead of removing the spleen I have on several occasions tamponed, and in two instances fastened the tampons by catgut sutures, these patients recovered. One was a gun-shot wound involving the lung, diaphragm, liver and spleen. This case, together with thirty-one other abdominal injuries, was reported in the *Military Surgeon*.*

Rupture of the kidney is a very common accident and is usually recognized by shock, localized pain, and the passage of bloody urine. A localized tumor will not form if the rupture occurs directly through the peritoneal investment into the peritoneal cavity. If the rupture occurs so that the blood accumulates in the loose cellular tissue surrounding the kidney, a tumor forms rapidly, presenting first in the posterior ileo-costal space, enlarging downwards, forwards, and inwards. Urine may also extravasate in the same directions and even towards the surface.

When the kidney is so lacerated that the hemorrhage accumulates in its pelvis the tumor is usually small and forms slowly, perhaps requiring several days before it can be detected. In such cases either the amount of blood in the urine is rather excessive or because of blocking of the ureter by clots little or no blood is found in the urine. When the ureter is blocked or injured so as to prevent the escape of bloody urine into the bladder the tumor may enlarge quite rapidly, being similar in its action to an acute hydronephrosis. In one case which I operated upon, all kidney tissue was destroyed in twenty-one days—the tumor filled the right side of the abdomen, occupied the false pelvis, passing at the level of the umbilicus and below into the left half of the abdomen. In this rare case the ureter was also enlarged, but not blocked, there being bloody urine in abundance. Both kidney sac and ureter were removed. The woman recovered. In another case a similarly distended, though smaller kidney, was incised and drained with the hope of saving its functional activity, which was successful. Other cases have been observed in which from the subjective and objective symptoms there could be no doubt but that the kidney was ruptured, but as a rule these people got well without any surgical interference. I formerly found the Harris segregator in the male, and the Kelly cystoscope and ureteral catheter in the female, of great value in determining the source of a hematuria, as well as the functional integrity of both kidneys. The Kelly instruments are as useful today. The Harris instrument is now obsolete.

Fatal intra-abdominal hemorrhage may follow a rupture of the kidney, but this is an unusual result. In one of my cases a kidney was torn loose from its normal position. On post-mortem examination it was found in the pelvis anchored merely by its ureter. Strange as it may seem, this man lived eight hours after a fall of forty feet, which caused the injury. There were multiple fractures of the extremities complicating the abdominal injury.

TREATMENT

1. Rapid intra-peritoneal hemorrhage from a ruptured kidney should be treated by immediate resort to an abdominal section, ligature of the renal vessels and removal of the injured organ.

2. *Retro-peritoneal rupture of the kidney* with the formation of a tumor is usually best treated upon the expectant plan as regards surgical interference. Ergot, opium and turpentine should be given internally. Experience seems to show that the bowels should be kept quiet because of the intimate relations of the colon to the kidneys. Disregard of this point has been known to bring about a recurrence of renal hemorrhage. The local use of ice is beneficial.

3. *The development of sepsis* following a retro-peritoneal rupture of the kidney, requires a post-peritoneal incision for the establishment of drainage.

4. *Life-threatening hematuria,* the result of an injury to a kidney, demands nephrectomy by the lumbar route.

5. *A complete or partial rupture of a ureter* should be treated by an attempt to repair the ureter through a retro-peritoneal opening. Failing in this a nephrectomy should be carried out by extending the incision upwards.

6. *Rupture of a kidney,* followed by an accumulating hemorrhage into its pelvis, should be treated (1) primarily like an extra-peritoneal rupture; (2) an extra-peritoneal incision into the kidney should be made for the purpose of relieving the pressure and threatened renal atrophy, unless within ten days or two weeks there are positive signs that the tumor, if large, has ceased to increase and has begun to decrease in size. This practice is warranted because if one of my cases complete destruction of all kidney tissue resulted, from overdistention, in twenty-one days. (3) It may be necessary to (a) attempt to obliterate a degenerated kidney sac by an incision and drainage, or (b) its complete extirpation may be advisable should the patient's general condition warrant such an undertaking.

RUPTURE OF THE BLADDER

When the bladder is ruptured by reason of a contusion of the abdominal wall the determination of the character of the injury is usually simple. The history of the accident—the time intervening between the last urination and the time of the accident, which, if from five to eight hours, would indicate a fairly full bladder; and hence in a favorable condition to give away under a traumatism. If the accident was immediately followed by well-marked shock and abdominal pain most intense over the bladder; if the patient were able to pass a small quantity of bloody urine, or if upon introducing a catheter the surgeon could remove a little bloody urine, the combined history and findings would prove almost to a certainty that the bladder had been ruptured. The injection of a measured quantity of sterile warm salt solution through a catheter into the bladder and this fluid immediately allowed to flow out and be measured will determine positively whether or no any, and how much, of the fluid may have escaped through a rent in the bladder. If the wound be intra-peritoneal and of large size, most of the salt solution will have passed into the peritoneal cavity. If the wound be intra-peritoneal and of small size, most of the solution will return through the catheter. There will be very little pain when the warm salt solution enters the peritoneal cavity. When the wound is extra-peritoneal there will be considerable pain produced by the forcing of the fluid into the extra-peritoneal spaces within the pelvis and under and above the pubes. If air be injected by means of a Davidson syringe through a catheter, it will, if the bladder be intact, produce a circumscribed tympanitic tumor above the pubis. If an intra-peritoneal rupture is present, the air will enter the peritoneal cavity and its presence can be determined by an increasing tympany. When the rent is extra-peritoneal, the injection of the air is painful, and its presence outside the peritoneum can be determined by emphysema of the suprapubic and pelvic cellular tissue. When the wound is both intra- and extra-peritoneal, the symptoms of intra-peritoneal rupture will predominate, as there is little resistance offered to the escape of the urinary secretion into the peritoneum. Of course, if the extra-peritoneal rupture is large and the intra-peritoneal rupture very small, the reverse will be the case. When a rupture of the bladder is both intra- and extra-peritoneal, there is but one wound (sometimes stellated), the boundary line between intra- and extra-peritoneal being the nearly horizontal line of reflection of the parietal peritoneum onto the bladder.

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*Read before the International Congress of Military Surgeons, St Louis, Mo., Oct. 10-15, 1904.

Usually twenty-four to forty-eight hours after an intra-peritoneal rupture symptoms of peritonitis develop and death follows. If, however, the urine and urinary passages were normal prior to the accident and no infection is introduced by means of a catheter, sterile urine will enter the peritoneal cavity and there will be no peritonitis.

In one of the writer's cases one gallon of urine and some clots were removed from the peritoneal cavity five days after the accident. There was no peritonitis. Extra-peritoneal rupture is almost invariably followed by a dangerous suppurative cellular inflammation involving the suprapubic and pelvic retro-peritoneal spaces. Should the patient survive long enough and the inflammatory products not be evacuated by art or nature, they will extend to the anterior wall of the abdomen.

TREATMENT

1. An intra-peritoneal rupture of the bladder must be treated by an early abdominal section for the purpose of sewing up the wound in the bladder, and for the cleansing by thorough irrigation of the peritoneal sac. Drainage should be employed if there are evidences of peritonitis.

2. Extra-peritoneal rupture requires a median suprapubic extra-peritoneal cut for drainage. The wound into the bladder may be sutured in part with an absorbable suturing material, but usually this is not advisable. I took care of a young girl injured in our second tornado, who sufered a fractured pelvis with an extensive extravasation of blood and some extra-peritoneal leakage from the bladder. She was treated successfully by suprapubic incision and a gauze tampon drain. As a rule, in every case a rubber drain should pass into the bladder and gauze packing be lightly introduced into the prevesical space. If there has been such extravasation as not to be relieved by a median incision others are demanded where they will do the most good. Perfect drainage must be established.

A combined intra- and extra-peritoneal rupture should be treated by a combination of the practice given above.

LIVER TREATMENT IN SPRUE

From reports it appears that anemia of sprue in which there is a high color index and fewer than 2,000,000 erythrocytes can be expected to respond to the administration of Minot's liver fraction (Liver Extract No. 343, N. N. R.) with a shower of reticulocytes, unless the bone marrow is hypoplastic. Clinical cure, apparently, follows, but the type of pernicious anemia persists for at least two months after liver extract has been administered. A recent report of a case of sprue treated with Liver Extract No. 343, N. N. R. refers to a patient who was admitted to the hospital in a moribund condition and who has apparently recovered completely. (*Jour. A. M. A.*, October 6, 1928, p. 1038).

PUBLIC HEALTH*

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It is not an exaggeration to say that of all our material concerns none exceeds the importance of health, for on it depend directly or indirectly, in varying degree, the use and enjoyment of all our faculties and resources. What is true of the individual is true in great measure of the community and it is not altogether paradoxical to say that if government should in some halcyon future direct its energies and resources primarily to the improvement of health, it would not only make a notable contribution to human happiness, but would importantly advance its wonted and traditional concerns, the maintenance of law and order, the increase of wealth, the promotion of education and citizenship.

The arts of peace have in the past more than once been lessoned by the experience of war. We might here derive something from the practice of the army. No officer would undertake the training of recruits who had not been found physically and mentally able to respond to that training. Passing by the controversial interpretation of the army mental tests and the extreme programs that have resulted from such interpretations it is desired here only to illustrate the fundamental importance of physical condition and physical fitness for the performance of the routine duties of the soldier and citizen.

If less conspicuously necessary in civil life, if many tasks of civilized society can be successfully performed by the physically handicapped, no argument for poor hygiene can be derived from this source. The fact that a well established business can survive occasional losses does not make avoidable losses tolerable; that it may make progress with inefficient methods in some departments does not constitute an endorsement of inefficiency. Similarly the fact that few of us are physically at our theoretical best, that most of us persist in various unhygienic habits, and many of us have neglected easily corrected physical defects, yet are still alive, on the whole perhaps socially useful and progressive, and not wholly lacking satisfaction in ourselves, does not justify hygienic slovenliness, but merely exemplifies the standards of our period and shows that the passing grade to social competency, notwithstanding our ingrained belief in the fury of modern competition, is far below perfection. American success and prestige is built and maintained by a people of whom roughly a third are physically incapable of full service and roughly a half have a mental age of about thirteen years.

These facts give little ground for pessimism. To the realist they mean that such a people can attain such a level of civilization as we enjoy today under our institutions. To us they hold out hope, that if and when what is remediable and easily avoided becomes matter of general knowledge and popular concern, a far better, brighter and happier future is in store for those who come after us, and in the light of this certainty our own lives become significant, for the future in a measure depends on how we who have some glimmerings of the light succeed in letting it shine upon others, to the end that the collective thinking and action of the present generation may promote the health of succeeding generations and through better hygiene increase unto them all good things.

Health, in so far as we may collectively promote it, is a matter of habits, knowledge and ideals. The habits of a people, the folkways tend to be conservative, static; we are, therefore, concerned with the inculcation of new habits, with a widespread effort to alter our folkways. The work is hopeful in proportion as we deal with the young, suggestible and adaptable; for it is easier to inculcate favorable habits than to eradicate those that handicap. Our youth as a nation favors the process, not so much because our national life is short in reality, as because we are relatively little bound by traditions and ever ready to experiment. To offset this we evince a certain youthful irresponsibility and are not always loyal to the programs we set up and advocate; our record in the matter of the League of Nations and of prohibition are cases in point.

It may not be untimely to advert to the later from the standpoint of health. Newsholm has pronounced prohibition to be the greatest health movement of history. In America we are prone to disuss it as a moral issue, a trespass upon personal liberty or as an economic expedient. Leaving liberty aside as a vague and perilous subject, and by long usage the stamping ground of political orators, the other two viewpoints are not wholly without instruction for those who are primarily interested in public health.

It can hardly be controverted that the eighteenth amendment expresses the moral sentiments and economic convictions of the majority of the nation, as historically it was carried by moral organizations, reinforced by business support. Yet, I doubt if the expert in ethics would rank it very high as a moral enterprise. Virtue consists in moderation not abstinence and such abstract moral justification as the amendment may receive is perhaps chiefly in its relation to weaker natures, say our fifty per cent of thirteen year old minds, to save them from the disaster of abusing an instrument. We might have attained temperance, with patience and education; and the slackening of the educational movement during and since the campaign for prohibition is one of the reasons for the defective working of the law.

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*Read at the meeting of the Nebraska Public Health Association, Lincoln, Nebraska, Sept. 5, 1928.

This education consists in part of the continued dissemination of knowledge of the effects of alcoholism on public health and it is perhaps time to recognize and state that moral fervor and economic and political interest have distracted attention of late from the formidable train of unhygienic consequences and accidents directly and indirectly chargeable to alcoholism.

The subject is introduced here primarily to illustrate the extreme difficulty of changing folkways and to direct thought to the technique and methods of effecting such changes with the minimum of friction; for all such movements as that of public health propose as their objectives changes in our social habits. That knowledge alone is insufficient to effect and maintain progress is sufficiently evidenced by our failure to abolish commercialized vice, to obtain universal vaccination, immunization against diphtheria, the hygienic care of children in the home, reasonable procedure in dealing with criminals, the exemption of the adolescent from industry and the like. The evils mentioned are widely known, sufficient knowledge is available to effect vast improvements, but adequate response on the part of the public is difficult to obtain. Legislation, while often absolutely necessary, does not solve the problem, but merely transforms it into one of enforcement which in the face of public apathy or divided opinion is discouragingly imperfect.

Against discouragement we are defended by a recognition of the difficulties of our task and the consciousness of the immense progress achieved and accelerated in recent decades. I need only instance the lengthened span of human life, the control of yellow fever, typhoid and malaria, the vast progress in tuberculosis and the infectious diseases of childhood, the widespread feeling that our major tasks are in new fields today.

The statistics issued by the Nebraska State Bureau of Health most interestingly show the changes which have supervened in our fighting line against disease. In 1927 there was but one death reported from smallpox, but one from malaria, but 36 from typhoid and paratyphoid fever, but 46 from diphtheria; there were 400 deaths from tuberculosis. On the other hand diseases of the heart and arteries accounted for 3,639; cancer, 1,257; premature birth, 464; injury at birth, 107; puerperal deaths, 170; automobile accidents, 197.

Does this mean that we may feel comfort in place of many of our old anxieties and mobilize our resources and interests anew? Morbidity statistics would show that we are not yet ready to relax our efforts against smallpox, diphtheria and tuberculosis. In these three fields they certainly ought to be increased. Epidemics of smallpox still occur, chargeable largely to public lethargy and anti-scientific activities on the part of interested groups. A concerted effort might eradicate diphtheria; the Tuberculosis Association needs more generous support, as its sale of seals in Nebraska lags behind that of adjacent states. We should deceive ourselves if we accepted mortality alone as the measure of damage caused by any disease. The common cold in the head with its attendant sinusitis is sufficient to demonstrate this point. If, then, we are to carry on in the old fields, where are the energy and resources necessary for new undertaking to be found? Can we go on indefinitely organizing and supporting national societies with local chapters for each major malady? Already we have the American Public Health Association, The Tuberculosis Association, The Society for the Study of Cancer, The American Child Health Association, The Friends of Medicine and many others, to say nothing of child hygiene and mental hygiene associations. Could this body undertake to list all the national societies operating in Nebraska, together with the state, county, municipal and volunteer institutions and agencies dealing with health directly and indirectly the list would be a long one. On the one hand it would give us an enhanced sense of our resources and of the wide spread and growing interest in the field of health; on the other hand it would demonstrate the increasing difficulty of coordinating effort locally and the need of staff work and program making in the state and its subdivisions to the end of increasing efficiency, avoiding overlapping and filling gaps that may be left between the fields of action of our various agencies. Health work is being conducted by organizations as diverse as educational institutions and industrial plants, government and insurance companies, professional associations, medical, dental and nursing, fraternal orders and religious bodies. Part is locally organized, part nationally. It is humanly possible that all of us are more conscious of our individual field, effort and loyalty than of the whole of which we form parts.

The wide spread interests is matter of congratulation, the multiplicity and diversity of instrumentalities creates locally a problem of organization and of adjustment of community programs to national movements. Ultimately the need will be felt of simplification and decentralization, if our sectional endeavors prove incapable of advantageous adjustment to metropolitan scales, standards and costs. In health work as in other phases of our national life we are at present balancing between centrifugul and centripital forces, between diversity of sectional cultures and nation-wide standardization, between a selfsustaining countryside and one depleted by excessive urbanization.

Since we are come to a point where we must reflect upon a choice of methods, a variety of goals, a diversity of agencies, such an organization as a state association of public health may well perform a useful role as a neutral body to serve as a clearing house for opinion, means of pooling partial experiences, a coordinating center for the various agencies involved; and it may aid materially in adjusting programs by suggesting a sort of priority list of necessary undertakings, as well as serving to adjust the health movement as a whole with other parts of the welfare program of state and town.

If, for example, we were to undertake here in Nebraska to render the first eighteen years of life as healthful as the present state of science permits, there is scarcely one of our institutions we might not call upon to assist, might not expect to modify its program in assisting.

At the onset we should encounter our high maternal mortality, over 6 per 1,000. England today is agitated over a mortality of 4 per 1,000 which has remained practically constant for 20 years. The subject is ventilated in the public press and discussed in parliment, while our greatly worse conditions have attracted little attention outside of professional circles. Last year we had in Nebraska 889 stillborn and an infant mortality of 1,427 out of 12,369 births, of which only 5,192 were cared for in hospitals. Proper prenatal care, more general hospitalization would do much to improve this situation. Medical educators are discussing ways of improving training in this important branch of practice, but there is also need of reaching the practitioners of medicine, especially the older men and inducing them to improve their methods and keep pace with progress in this field. The public must be roused from its confidence in the normality of childbirth and made to comprehend that it is a critical period of a woman's life and that she should have competent medical supervision during the whole period of pregnancy.

When we turn to the preschool period we cannot but be disturbed by the neglect of health in our homes as revealed by examination of children in the school. The Richardson County Medical Society examined some 5,000 children last year. Over half of them had decayed teeth and disease of tonsils; 1,500 were improperly nourished; 1,000 had impaired vision; 500 defective hearing; 300 had goiter; 100 organic heart disease. Similar statistics are being collated all over America this month as schools reopen. Massively this evidence evinces the need of more adequate hygiene in these unprotected years of childhood, when the home is the all but exclusive agency of health and education.

Much as the public schools have undertaken for health and beneficient as their service is proving, their health programs are still very generally undersupported financially. Under the state law the teacher has responsibilities for the health and hygiene of the pupils and sanitary conditions in the buildings, yet but little provision is made for her education in these matters. Last year the State Medical Association inaugurated series of lectures in some of the normal schools and a health course for teachers was given in the summer sessions of the state university under its auspices and that of the Nebraska Tuberculosis Association. With the highest praise for such useful efforts, it is hardly reasonable to leave to volunteer effort fundamentally important training which should become an integral part of the normal school curriculum.

In the schools themselves health education is still far from receiving its due recognition as a fundamental function of the institution, or more exactly a condition of the full performance of its service to society. There is great need of educating school boards in the importance and normal budgeting of health instructions and health service. It is not meeting the health needs of the majority of pupils at school or college to produce winning teams. Though unhappily our thirteen year old mentality prefers the excitement of the contest to the less spectacular raising of the general level of health and happiness of the pupils as a whole.

Our apparatus for mental hygiene is all but non-existent in the state, notwithstanding the immense popular vogue of psychology and the increasing recognition of its contribution to normal living. When the problem child has been recognized by parent, teacher, nurse, physician, juvenile court or child working agency we are all but destitute of means of caring for him. True it is that both medical schools are doing what they can in this matter, but the load is greater than educational institutions ought to be asked to carry. Our institutions for the insane and feeble minded are crowded and while they house and give humane care to these unfortunates they are neither staffed, equipped or financed for constructive reeducation nor scientific investigation of these complicated cases. This criticism is not of the worthy men who have devotedly served these institutions but of the citizenship which allows their efforts to be frustrated for lack of means. No mental clinics are available to our courts, prisons or reformatories, which, of course, means that the salvage of juvenile offenders is less than if modern facilities existed.

Finally to our list of sins of omission against the health of youth must be added the positive fault of using children in industry.

It is evident that our health program for childhood and youth shows many gaps and deficiencies and this indicates the need of some sort of survey which may bring home to our people the important fields in which we are beginning to lag behind normal modern practice. The first step towards progress is the recognition of defects and it is probably wisdom to diffuse knowledge of our needs in health work among the people, before raising the tender problem of ways and means for meeting them. In the long run public demands have a way of getting satisfied; the first step is to create and diffuse the knowledge that creates the demand.

There is a limit to the possibilities of taxation and evidence is at hand that we are nearing the end of toleration. Each new need cannot be met indefinitely by new taxes. We here reach the gigantic problems of efficient use of public funds, of intelligent economy in meeting public demands, of statesmanlike selection among demands of those most truly ministering to the public good. In too many ways we, as a community, expend our resources at random like an unbudgeted family, where the installments on automobile, piano and radio leave nothing over for the care of the children's health. Intelligence consists in getting first things first and in the scale of earthly values few things can be preferred to health.

ENDOCRINOLOGY IN ITS RELATION TO SKIN DISEASES*

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The cutaneous manifestations which result from the reaction to mechanical and chemical traumatisms, or from the activities of micro- and macroscopical organisms are well understood. We are also familiar with the character of skin eruptions in connection with such systemic diseases, as the acute infectious exanthemata, syphilis, tuberculosis, etc. In a number of dermatoses, however, among which are some of common occurrence like eczema, psoriasis, lichen planus and others we are still groping in the dark concerning the etiology. The perception that most skin diseases are local manifestations would be revised very promptly, if every patient afflicted with them should be submitted to a thorough examination by an internist and pathologist. Internal conditions might be revealed showing a direct connection with the changes in the skin. Even then, while convinced of the presence of a systemic cause, we are often not able to detect the same. Hereditary predisposition, congenital changes in the tissues, focal infections, protein sensitization, abnormalities of the blood constituents, functional and organic nerve disturbances are set forth as etiological factors, without a knowledge or proof of their action upon the skin. It seems logical that the solution of this problem often lies elsewhere. The ductless glands unquestionably play an important role in a number of obscure skin conditions. It is only in recent years that their importance has become properly appreciated, but at that we seem to be only on the threshold of important discoveries(1). The relation between the ductless glands and pathological conditions is so intricate that its correct interpretation is surrounded by great difficulties. The functions of the endocrine system are not well understood and to put their knowledge on a sound scientific basis the application of the entire physiologic and pathologic knowledge will be needed(2). A persistent study of this field(3) will incidentally throw more light upon many questions in dermatology. Until then, however, we must content ourselves with tentative conclusions which even as such might be of benefit to our patients.

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*Read before the Missouri Valley Medical Association, Omaha, October 31, 1928.

The specific secretion of each ductless gland exerts an influence on the others(4), establishing an interrelation, so that more than one may be involved in producing changes in the skin. The autonomic nervous system retards or accelerates the endocrine activities according to the demands of the body, producing a balance necessary to normal nutrition, growth and development(5). Accordingly, a fault in the proper functioning of one gland will give rise to a similar condition in others, so that deficiency may again lead to deficiency or to excess from overcompensation.

Suggestive of endocrine involvement are changes in the basal metabolism, hyperglycemia, x-ray evidences, changes in the skin, bones, etc. Last, but not least, improvement from exclusive endocrine therapy might be taken for more than a mere accident, even though it cannot be proven that because the administration of the extract of a gland improves or cures a disease, this was due to a deficiency of this particular gland.

The effects of thyroid disfunction on the skin are indisputable. They are well known in myxedema and exophthalmic goitre. Involvement of the skin is found in nearly fifty per cent of all these cases(6), appearing as keratosis, dystrophy of the hair and the nails, hyperpigmentation, deficiency of oil secretion, dryness, scaliness and pruritus. From this, we may be allowed to speculate on the etiology in other similar cutaneous types. Temporary enlargement of the thyroid gland is not uncommon during puberty and pregnancy and is responsible for functional and nutritional hyperactivity in the skin, which in turn may cause hypertrichosis, pigmentations and hypersecretion of the oil glands. External temperature affects the thyroid, stimulating its function through cold and diminishing it through heat, which known fact is taken to account for the difference in the winter and summer furs of animals. A similar conception may explain erythema multiforme, herpes zoster, psoriasis, which often depend on the season of the year, and general idiopathic pruritus brought on by sudden changes of temperature. Foerster(7) suggested the possibility of the effects of changes in the hormones-producing organs on the evolution of eczema and psoriasis. Beinhauer(8) found in 69.3 per cent of eczema an impaired function of the excretory and metabolic system. McEwen(9) reported a case in which an extensive psoriasis and a severe exopthalmic goitre appeared simultaneously, showing a possible influence of the changed metabolism in causing psoriasis. Stimulation of the thymus with x-rays(10) is followed at times by remarkable improvement in psoriasis. This and the fact that during the first two years of life, when the function of the thymus is at its height, psoriasis is rarely seen may be looked upon as another link in the chain of circumstantial evidence of its endocrine nature.

The deficiency of oil in the skin in hypothyroidism with the usual secondary changes which, of course, may also occur independently, may be an important factor in ichthyosis. Apparently confirming this, a case of a patient with hypothyroidism and ichthyosis may be cited in whom thyroid medication produced remarkable improvement in the skin condition:

E. B., girl, 18 years, had an abnormally dry skin since infancy. At the time of her presentation the skin was rough, scaly and the joints, especially of the knees, stiff and painful. The hair was lusterless and thin. Above both malleoli were patches of infiltrated scaly eczema. Numerous furuncles and old scars were scattered over the body. The hands were cyanotic. Menstruation was scanty and irregular. The patient was mentally slow and always felt tired. General physical examination was negative except a leucocyte count of 10,000, probably due to pus foci in the teeth. Basal metabolism was minus eight. Administration of extract of thyroid gland cleared up the eczema, lessened the scaliness and improved the general condition.

General exfoliative dermatitis is unquestionably a systemic condition with a profoundly interfered nutrition of the skin of unknown origin. The usual treatment, except in metallic poisoning, is purely symptomatic and of little benefit. In two grave cases, one of which was moribund, having tried every known treatment ineffectually, I administered thyroid extract empirically and both made remarkable recoveries.

J. T., boy, 18 years, came under observation with a general exfoliative dermatitis of six weeks duration. Previously he had always been in good health. The eruption started with fever which at times rose to 102° F. The skin of the whole body was uniformly red, dry and profusely scaling. The scalp was nearly bald, the eyelids showed ectropion, the lips and the mouth were excoriated and bleeding. Painful fissures had developed about the joints. The mental faculties were dulled. One week after admission he had three epileptiform convulsions during which he was unconscious. No history was obtained of these having occurred previously in his life. A thorough general examination showed no abnormal conditions. Spinal fluid and Wassermann tests of blood were negative. Basal metabolism was minus twelve. The usual local and internal medications were tried with no result at all. Eventually extract of thyroid gland was administered as a last resort and from this time on the patient improved rapidly. He brightened mentally, his temperature returned to normal and the scaling became less. Eight weeks later he reported that his skin had returned to normal, that his hair showed its natural growth, that he felt well and had gained in weight.

Inflammatory skin eruptions are due to circulatory disturbances, such as congestion, vascular paralysis, obstruction of blood supply, etc.(12). Interference with the circulation is followed by nutritional changes which manifest themselves as leucocyte infiltration, vascular dilatation or obliteration, hyperplasia, dyskeratosis, hypertrophy and atrophy. Hunt(11) points out that circulatory and nutritious disorders are synonomous, since the changes in the speed and force of the blood circulation and in the nutrition go together. If due to gross pathologic changes in the circulatory organs these are more or less recognized. The circulation may, however, be disorganized from obscure reasons. The inference that the endocrine system may at such times be involved is reasonable.

The close interrelation of the adrenals with the sympathetic nervous system must be considered in Raynaud's disease, idiopathic gangrene, urticaria and angioneurotic oedema. Cases of urticaria of years duration and resistant to all treatment, at times yielded to endocrine therapy. Some were interpreted as anaphylaxis to toxic proteins liberated through faulty thyroid secretion. Mumford(13) cites a patient with chronic urticaria and thyroid deficiency who was relieved by thyroid medication. Ravitch(14) reported the same result in nine other cases.

The chromafin system of the adrenals controls to a certain extent the distribution of pigment. Its disorganization causes the pigmentation of Addison's disease and may possibly be influential in albinism, vitiligo and other pigment abnormalities.

The influence of the gonads on the skin is observed during puberty, pregnancy and the climacterium. Increased secretory activity may lead to acne vulgaris, circulatory interference to the vascular dilatation and passive hyperaemia of rosacea. Endocrine therapy is frequently found beneficial in these conditions. Ovarian substance directs its chief effect on the female pelvic organs(15) and is of distinct value in the vasomotor disturbances of the menopause. An un-looked-for effect of ovarian extract, therapy on lichen planus occurred in the following case:

Mrs. M. A. G., 55 years, has been since her climacterium, occurring five years ago, extremely nervous, restless and has suffered from insomnia. Five weeks before her presentation a typical eruption of lichen planus appeared in the left popliteal bend from which it spread over considerable portions of the body. Itching was constant and severe. No treatment gave relief, until ovarian extract was administered for her climacteric symptoms. Shortly afterwards the itching subsided, the lesions began to involute and to disappear. Since lichen planus is resistant to the usual treatments and always runs a chronic course this experience suggests a possible etiological factor.

The cause of scleroderma is obscure but because of its frequent association with outspoken thyroid disease(16) and the improvement obtained at times from administration of thyroid extract a connection may exist with this and other glands of internal secretion. Castle considers the essential cause of scleroderma a combination of a disordered function of the internal secretory glands together with an affection of the nervous system. It is probable that the internal secretory system acts as a whole, and that the responsibility cannot be fixed upon any one gland.

In acromegaly lesions in the structure of the hypophysis are almost always found. The skin is hypertrophied, dry, and rough from diminished oil secretion. The hair becomes thick, strong and coarse. Pigmented and fibromatous growths occur.

Much more theorizing might be indulged in, but the object of this paper is to show that a relation of the endocrine glands to some skin diseases is proven by authentic facts and is probably present in others. It is a problem of great importance and its thorough study with an open mind should succeed in putting our knowledge on a scientific base, revealing the nature of many obscure conditions and leading to efficient therapeutics.

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ROTOGRAVURE INK DERMATITIS

In fifteen cases of rotogravure ink rematitis reported by Edward A. Oliver, Chicago (*Journal A. M. A.*, Sept. 22, 1928), the condition was characterized by an acute inflammation of the skin of the face, the occasionally of the neck, and swelling of the eyelids; in most cases it was productive of considerable pruritus. In one case it was seen on the scalp. Its worst periods always occurred early in the week, generally on Monday and Tuesday, although the irritation was always present until the offending agent was removed. The dry color used in the ink, para red, is undoubtedly the irritating agent.

Doctor: "What you need, my dear young lady, is a little sun and air."

Sweet Young Thing: "Why Doctor, how dare you! Why I'm not even married."

THE DOCTOR AND THE WORKMEN'S COMPENSATION LAW

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There are three good reasons why every physician in Nebraska should be vitally interested in the Workmen's Compensation Law.

The first reason is: This law is special legislation and arbitrary in character. The second is: This law has made possible one of the largest single units of socialized medicine, and third: Doctors have been charged with profiteering in compensation service.

This indictment should not be allowed to stand if not based upon facts.

I have made a careful analysis of the report of the Nebraska State Labor Commissioner, for the two years ending December 31, 1927, and present the following evidence as conclusive proof that the charge of medical profiteering is without foundation.

The state, through its agency the Labor Commissioner, has broadened the provisions of the Workmen's Compensation benefits, until at the present time practically every phase of medicine and medical treatment is embraced.

Medical Service accorded Workmen for Accidental Injuries is:

Medical, surgical, dental, hospital and nursing treatment.

Medicines, splints, artificial limbs, eyes and teeth and spectacles.

Medical examinations, reports, opinions, and testimony, for employers, insurance carriers, employees and the labor commissioner, for disabling and non-disabling injuries the result of trauma.

Medical Service accorded Workmen for accidental injuries causing an aggravation of a pre-existing disease, (which has been interpreted by the labor commissioner to also include injuries increased by contributory disease), is:

Medical, surgical, dental, hospital and nursing treatment.

Medicines, splints, artificial limbs, eyes, teeth, and spectacles.

Medical examinations, opinions, reports and testimony for employers, employees, insurance carriers, and the labor commissioner ordered by the labor commissioner, for disabling and non-disabling disease, contributory disease, such as infected tonsils, teeth, sinuses, disease of the lungs, heart, kidneys, bladder, pelvic organs, gastro-intestinal tract, brain, cord, nerves, blood vessels, etc., which may effect directly or indirectly, or not at all, disabling and non-disabling injuries, the result of trauma, in addition to conditions actually aggravated by the accidental trauma.

The medical profession is not accountable or responsible for these administrative concepts. This administrative policy has obviously increased the benefits to workmen and likewise medical expense. The result is not peculiar to the compensation law. But notwithstanding the increased benefits accorded by the labor commissioner the expenditures for medical service has been outstandingly proportionately reasonable. This is plainly borne out by the following analysis of the labor commissioner's report, for the year 1927:

1. The amount of premiums collected by insurance carriers for the year 1927 was $1,573,649.

2. The amount expended for losses for the same period was $998,957.00.

3. The difference between these items is the balance left for the carriers, which was $587,692.00 This balance is equal to 60% of the total amount paid for both compensation and medical service for the year of 1927, and is a fairly comfortable margin.

4. The total number of cases recorded was 19,045.

5. The total amount of money paid for medical service was $300,394.24.

6. The average cost per case for medical service was $15.77.

7. The total number of cases requiring medical service was 19,045, but 14,394 or 70% of these cases recovered in the first 7 days and, therefore, under the law received no compensation.

8. The total cost for medical service for this group of 14,394 cases that received no compensation was $104,125.84.

9. The average cost for medical service per case for this group of 14,394 cases that received no compensation was $7.24.

10. The total number of cases that received medical service and also compensation was 4,651.

11. The total amount of compensation paid to this group of 4,651 cases, was $692,594.15.

12. The average amount of compensation paid per case was $149.00.

13. The total cost for medical service (keeping in mind what medical service embraces) for these 4,651 cases was $196,264.40 (this sum is the difference between $300,394.24, the cost of all cases for medical service, and $104,125.84, the cost for medical service for the 14,394 cases that received no compensation).

14. The total cost for medical service and compensation for these 4,651 cases was $888,859.50 (this being the difference between the total cost of 19,045 cases which was $992,984.39 and the cost for medical service only, for 14,394 cases that received no compensation which was $104,125.84).

15. The cost of compensation for these 4,651 cases was $692,594.15.

16. The average cost per case for compensation was $149.00.

17. The average cost for medical service per case for these 4,651 cases (keeping in mind what medical service embraces) was $42.20.

18. The percentage of medical service cost for these 4,651 cases was 22½%.

19. The average cost per case for medical service for the 19,045 cases recorded was $15.77.

20. The average amount of compensation paid per case was $149.00.

21. The average medical cost per case is equal to about 10% of the amount paid for compensation per case.

The average cost per case for medical service for the following classified groups of injuries of the 19,045 cases, was:

Laceration and Cuts	$ 9.50
Bruises and Contusions	12.10
Foreign Bodies	6.28
Sprains and Strains	12.28
Fractures and Dislocations	33.11
Burns and Scalds	10.38

Infections and Poisons	14.80
Herniae	101.35

In 19,045 cases, the percentage of cases that cost over $100 is as follows:

.017% cost over $100.
.014% cost from $100 to $200.
.0038% cost from $200 to $500.
.0003% cost over $500.

Now let us apply the above figures to the physicians:

According to the report of the state department of labor the total medical and hospital expense for workmen's compensation, 1927, was $300,390.24. I estimate the cost of hospital service, medicines, dental service, braces, splints, artificial limbs. medical examinations, reports, testimony, etc., to have been at least 30 per cent of this gross amount or $90.117.00.

Balance paid for surgical and medical service $210,113.00.

The total number of physicians in Nebraska is approximately 2,000.

Total number of compensation cases treated in 1927, 19,045.

Average number of compensation cases treated per physician, 9.

Average amount received per physician, per case, $11.77.

Average total amount received per physician, $105.00.

Average gross income of physicians in Nebraska, $6,500.00.

Average percentage of income received from Workmen's Compensation fees, .01½ per cent.

This is not a staggering charge on the part of the doctors.

There are two major divisions in the expense of compensation, namely:

1. Benefits to the workmen.
2. Provision for these benefits.

If one looks into the provision for benefits without prejudice he is faced with some startling facts. The total premiums collected for 1927 was $1,573,649. The total amount paid for medical service and compensation was $988,957. The difference between these items is $587,692, which is the balance left for the insurance carriers for administration purposes.

The total cost of medical service rendered to 19,045 injured workmen for the year 1927 was $300,394.24. The amount left the insurance carriers for administration purposes for the year was $587,692, which is 190% of the total cost for medical service. In other words the administration sum of insurance carriers was $289,293 more than the entire medical service cost.

The total amount paid for compensation for the year 1927 was $692,594.15.

The total amount of compensation paid to 19,045 injured workmen by insurance carriers was only $104,902.15, more than the amount set aside by the insurance carriers for administration purposes.

One is compelled to conclude that probably individuals other than the doctors may be the source of the increased cost to employers for Workmen's compensation.

I am of the opinion that a material saving could be made and at the same time all just and reasonable obligations of industry fulfilled, were a more comprehensive and definite provision made for medical service and compensation for conditions classed as "aggravation of pre-existing disease."

These conditions are frequently confused with contributory disease. While it does occur, contributory disease is not often proximately aggravated by accidental injury. On the other hand accidental injury is frequently aggravated by contributory disease. A differentiation between the benefits arising from contributory disease and aggravation of disease might, with profit, be made.

I believe that industry should be required to restore an injured employee to his former relative physical condition and earning capacity or compensate him for the difference. But there is a vast difference between this requirement and the policy of requiring industry to treat all disease the injured employee may have in an effort to restore to normal an injured employee who was 40% below normal, because of disease at the time of his injury, or to compensate him for the difference between the degree of restoration and an arbitrary 100% normal physical state. I doubt the wisdom of compelling industry to assume the accountability for disease, for which it is not responsible, and the cost of which, in the end, must be paid by the public.

The medical profession should do its full share in this compensation social experiment but it should not be expected to assume, or coerced into bearing a non-equitable financial burden in order that unusual social benefits may be provided for a special class of individuals, however worthy this class may be, or to sustain an inordinate administrative expense for the insurance carriers, in order to make the experiment a success.

When insurance carriers administrative charges are $289,293.00 more than the entire cost for medical service and 60% of the combined cost of medical service and compensation, I believe that any fair minded individual will conclude that some improvement might be made in the insurance carriers' administrative expense.

At any rate, until insurance carriers can show that a margin of 190% of the total cost of medical service is justifiable, in the face of the fact that compensation is paid to only 30% of the injured workmen, while medical service as accorded workmen under the present law is rendered to 100%, I shall maintain that the doctors are not the fundamental cause of the increased cost of Workmen's Compensation in Nebraska.

The governor appointed a committee to study the whole compensation problem. This committee was in session for weeks and there is not one word in the published report of this committee recommending improvement in the cost of insurance administration. But there are several recommendations, which if enacted would affect the medical profession and be far reaching. I call your attention to three:

"That appeals from the commissioner be taken direct to the supreme court based on the record before the commissioner." This elevates the labor commissioner's office to the status of a court. It takes money and time to secure a hearing in the supreme court and this recommendaif enacted would for all practical purposes prohibit appeal from the labor commissioner.

"That the compensation commissioner with the advice and the assistance of such *experts* as *he may deem necessary*, be authorized to establish a medical hospital fee schedule, which may be changed and adjusted from time to time as *circumstance may make it advisable*." This is despotism. The only relief that a doctor or a hospital would have from the schedule of the labor commissioner would be an appeal to the supreme court and an appeal would be in most cases prohibitive.

"That physicians, surgeons, and hospitals be made a party at interest, before the courts (the only court provided for is the supreme court, author) and the commissioner in order that they may secure payment for their services without relying upon the willingness of the injured man to bring the action." This recommendation, if enacted and held constitutional, would constitute a waiver of rights of physicians and hospitals and put them under the compensation law, by special legislation, and a special legislation, not primarily enacted for their benefit but for the benefit of workmen and industry.

Compensation acts are based on a new theory distinct from the old theory of damages, the underlying thought of which is one of insurance. The compensation awarded is intended neither as a charity to the employee nor a penalty against the employer. The old theories of law regulating the right of an employee to recover against his employer for personal injuries grew out of conditions surrounding the small industry. The common law refused any recovery except in cases where the employer was shown to be negligent, and negligence being shown ,there were three common law defenses. (1) Contributory negligence on the part of the employee. (2) Negligence on the part of a fellow servant. (3) The doctrine of assumed risk.

Under the recommendations of the governor's compensation committee, physicians would be subject to the personal whims of a labor commissioner. Labor commissioners are political appointees, and sometime the appointment may be in payment of political services. Who knows what the ability, judgment and culture of future labor commissioners may be?

Briefly the recommendations of the compensation committee, if enacted, would create: A compensation despotism; subjection of hospitals and physicians to special legislation enacted for and intended for the benefit of workmen and industry only; a waiver of rights of physicians and hospitals and a promulgation of state wide socialized medicine under the guise of Workmen's Compensation.

Workmen and industry should realize that socialism or despotism for medicine presages socialism or despotism for industry. But whether they realize it or not, the medical profession does not propose to submit to either despotism or socialism without a fight.

TRAUMATIC INTRATHORACIC RUPTURE OF THE THORACIC DUCT WITH CHYLOTHORAX*

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This case is reported because of the rarity of the condition and because of the interesting features presented; especially the delayed onset of the chylothorax, and the post-mortem findings of a recently perforated gastric ulcer, which had given no suggestive symptoms of perforation, though there had been a long history of "stomach trouble", undoubtedly due to this ulcer.

J. J. M.—Admitted to Lincoln General Hospital, April 30, 1928.

Chief complaint: Pain in right shoulder and middle and upper portion of back.

History of present illness: Patient was driving a Ford car which made a sharp turn and the car upset and the patient was pinned beneath the car. Following this the chief complaint above noted arose, together with moderate amount of shock. Patient states that he has been in rather poor health for nearly a year. Has suffered a rather severe pain in the left side of back extending down to left leg and ankle; some general debility and indefinite indigestion. There has been considerable sour stomach and some hunger pain in the course of the past twelve to fifteen years; has had some cough for nearly one year. Was in a hospital for one week in April, 1927, just before which time he weighed 225 pounds and since that time has lost some 35 to 40 pounds.

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*From the Department of Surgery; Lincoln General Hospital.

*Read before The Society of Resident and Ex-Resident Physicians of Mayo Clinic, Rochester, Minnesota, September 25, 1928.

Previous medical history: Indefinite stomach trouble for fifteen years as above noted. Injured back in runaway fourteen years ago, some lameness, stiffness and deformity of back since that time; considerable pain when stooping or working much, as in husking corn.

Physical examination: On admission patient found to be a large well nourished adult male, 52 years of age, about six feet in heighth and weighing about 200 pounds. Temperature 97.2; pulse 58; normal quality; blood pressure 70/45; respirations 16, shallow. He was conscious on admission, skin moist, cold and clammy; pupils equal and react normal to light and accommodation. Pain on pressure over the upper anterior right chest and also over the spine in the lower dorsal and lumbar regions; over this same area there is considerable ecchyomosis and swelling and a slight abrasion at about the angle of the scapula. There is a marked thoracic kyphosis; knee jerks were absent on both sides; free movement of both arms and legs. Following admission the patient complained, in addition to the above symptoms, of considerable pain in his right shoulder at which point there was some crepitus in the joint.

X-ray: Lateral x-ray of the spine on admission shows a marked productive osteo-arthritis with extensive spur formation, especially anteriorly; some spurs being as much as one-fourth inch in length, most prominent on the 8 and 9 dorsal vertebra. No fracture of any ribs.

The right shoulder joint and the proximal half of the right humerus was reported as showing incomplete linear fracture 5 inches distal to the proximal end of the humerus, no displacement and bone in perfect position.

During his stay in the hospital temperature varied from 97.2 on admission to 99.2 which was the highest point. Pulse varied from 58 to 110; respirations from 16 to 30, usual average about 20. On admission the urine was negative with the exception of occasional hyalin cast and an occasional pus cell.

May 3, 1928. Note was made patient in general good condition, though considerable soreness in back.

May 4, 1928. No disability of right arm except some limitation of motion and soreness in righ shoulder joint. Less soreness in back, but marked limitation of motion of back, probably of long standing.

May 5, 1928. Complains of some general abdominal pain and some distention, however, there is no tenderness at any point in the abdomen.

May 6, 1928. The leukocytes count was 15,650 with 80% neutrophiles. Except for the pain and soreness in the back and upper anterior right chest; the patient was comfortable and apparently in good condition for three or four days following the accident.

9 a. m. Rather sudden dyspnoea, rather copious perspirations, somewhat cold, some added distension but no pain, complains of stuffy feeling in chest and feeling of pressure in right side of chest. Now says somewhat short of breath for two days, somewhat worse at night, no pain in chest. Marked limitation of respirations, right chest breathing abdominal type, absent fremitus entire right chest which is flat from apex to base, left chest resonant throughout.

Breath sounds absent over most of right chest and very distant in upper right chest anteriorly; no rales at any point. Heart normal size, no palpable displacement, regular, no murmurs, sound somewhat distant. Blood pressure 140/100. X-ray at this time showed the right lung completely obliterated because of effusion in the right pleural cavity.

May 7, 1928. Aspiration seventh right interspace posterior axillary line, 1,000 cc brick-colored fluid removed with considerable relief of dyspnoea. Patient volunteered the information that he felt very much better following the aspiration. Examination of the fluid following centrifuge shows the fluid to be thin and creamy in type with multiple small fat globules with few blood cells, no pus cells. Because of the character of the fluid a tentative diagnosis of a ruptured thoracic duct was made.

May 8, 1928. A. M. Severe dyspnoea for a time during the night; more dyspnoea again in the morning, considerable coughing without production. Right chest again dull throughout, with absence of breath sounds. Heart: Apex 6th interspace anterior axillary line, probably having been pushed over by fluid in right chest.

7:30 P. M. Aspiration, same location as before. 3015 cc of fluid removed, same type as on previous aspiration. Following this breathing much easier, heart returned to normal position and patient very much more comfortable. Most of right chest became resonant following aspiration, except near base. Fluid again examined, specific gravity 1020; following centrifuge specific gravity 1005.

Wright's stain, red blood cells; few lymphocytes, no pus cells, no epithelial cells. Soudan stain, multitudes of small fat globules, ranging in size from 5 to 15 U. Culture sterile, gross appearance is that of bloody milk; fluid after centrifuge, rich creamy milk, delicate tinge of pink.

May 9, 1928. 7 P. M. Removed 3900 cc fluid, previous type, following which chest became resonant.

May 10, 1928. A. M. Had a good night, not short of breath, appetite poor. Still some dullness base of of right chest but resonant in upper one-half.

May 11, 1928. A. M. Very little difficulty in breathing. Patient very weak, pulse weak.

Noon: Fluid seems to be increasing in amount.

8 P. M. 20 cc of fluid withdrawn from right chest four hours after giving 5 grains methylene blue by mouth, no dye found in aspirated fluid.

May 12, 1928. 11 A. M. Some dyspnoea, heart again displaced markedly to the left, dull area right chest increasing; unable to retain fluids on stomach, vomits following ingestion of water; pulse weak, vertigo when assumed sitting posture.

1 P. M. 2960 cc fluid removed, similar in appearance to that previously withdrawn. Observe that he is secreting approximately 1 litre of fluid into the chest per 24 hours.

May 13, 1928. 7 P. M. Growing progressively weaker, vomiting greenish sour fluid frequently. Heart sound extremely feeble, difficult to count rate, pulse barely perceptible, rate seems to be about 90. Respirations rather rapid, slight cyanosis. No pain and seems to feel comfortable.

May 14, 1928. Pulse and heart beat gradually becoming more and more imperceptible. Patient expired 4:20 A. M.

PROCTOCOL OF POSTMORTEM:

Mr. J. J. M. Time of death, May 14, 1928, at 4:20 A. M. Post Mortem was held May 14, 1928.

External appearance: The body is that of a well developed elderly man, 182 cm. long. No edema. The right side of the chest has been painted with mercurrochrome and there are needle puncture marks. He has a marked kyphosis in the mid-dorsal region. There is a good layer of subcutaneous fat. Primary incision passes through two papilomata. One is just above the umbilicus and the other, smaller one is mid-way to the ensiform. On dissection of the upper one it is found to be a herniation into the belly wall. Dissection of the lower one shows it to be very much larger herniation of preperitoneal fat. This has only about two mm. of tissue between the ring and umbilicus. Belly muscles are well developed.

Peritoneal cavity: Peritoneum is smooth. Omentum is not adherent. No increase in fluid. Appendix is present and is adherent over the brim of the pelvis. Not otherwise abnormal. Mesenteric lymph nodes are not hyperplastic.

Thorax: Diaphragm reaches the 6th rib on the right and the 5th interspace on the left. The anterior portion of the right lung was adherent to the costal cartilage when sternum was removed.

Pleural cavities: Left, no adhesions and no increase in fluid. Right, the cavity contains three liters of thick bluish colored turbid fluid containing some flakes of fibrin. When in a bottle, this fluid has a chocolate brown color and some fibrin and blood cells are smeared on the sides of the bottle.

Pericardial cavity: Pericardium is not adherent to the heart and the pericardium sac contains about two ounces of cloudy amber fluid. This is suggestive of the same type of fluid as found in the plural cavity but not so cloudy and milky.

Lungs: Left. Divided into two lobes, pleura smooth. There is some bullous emphysema along the border. It is air containing throughout, no nodules are felt. Cut surface is normal. Peribronchial lymph nodes are normal. Right. This lung is divided incompletely into three lobes. The lower lobe, pleura is discolored red, and there is some fibrinous exudate. While partially collapsed,. the lung contains air throughout. There is some emphysema. No nodules can be felt. Cut surface of upper and middle lobe are normal. Lower lobe is deep red in color, crepetates somewhat and is a little more moist than normal. There is no pus or frothy fluid.

Heart: This is somewhat increased in size. No external findings. Right auricle is fairly markedly dilated and is filled with curror. Tricuspid valve admits four fingers and measures 13 cm. Cavity of the right ventricle is increased in size. Wall measures seven cm. Pulmonary valve, root of pulmonary artery are negative. Cavity of left auricle is normal in size. Mitral valve admits two fingers, barely. It measures 10 cm. No evident lesions of the mitral or tricuspid valve leaflets. There is little calcified point in leaflet of aortic valve. From the base of the posterior cusp, a little thickening extends down to the leaflet of the mitral valve. Mouths of the coronary arteries are patent. The vessels themselves are normal. Root of the aorta shows very little thickening. No calcification and no atheroma.

Liver: About normal size. No unusual external appearance. except the lymphatic vessels stand out clearly in the capsule. Over the dome, near the junction of the two major domes, there is a scar like thickening of the capsule. The cut surface shows a typical nut-meg liver appearance.

Spleen: Slightly adherent. Firm over part of the surface. Capsule is uniformly thickened. The organ is small and firm. Cut surface is pale red. No splenic follicles are seen. There seems to be a slight increase in connective tissue.

Thoracic duct: The receptaculum chyli is identified between the aorta and vena cava about one-half inch above the origin of the left renal artery. A canula was inserted and through this a solution of methylene blue was injected and it was found that the methylene blue emptied into the thoracic cavity, and by tracing the color it was found that the thoracic duct was torn between the 11th and 12th thoracic vertebrae. About even with the lateral line of the spinal column, between the duct and over the vertebral column there are tissues that seem to be friable as if they might be inflammatory in nature. When they are removed it is found that the 12th dorsal is quite prominent anteriorly, and that on the 11th and others above it there are marked spines of hyperplastic bone, irregular, not very sharp.

Stomach: Normal size. Lower border of pylorus is scarred. About three inches proximal to the pylorus there is an hour glass contraction with some thickening of the gastro-hepatic omentum. It is somewhat adherent over the lesser curvature and when torn loose is found to cover a perforated ulcer, and on the anterior gastric wall near lesser curvature 5 cm. from the pylorus. Rigid inspection of the small intestine shows no gross lesion, except that the terminal ileum was adherent to the mesentery of the appendix.

Note: Ulcer of stomach is punched out with sharp-lined edge and there is piling up and induration for a distance of 1 cm. Base of ulcer is composed of gastro-hepatic omentum.

Pancreas: Normal in size and external appearance. Cut surface at various points shows no evident lesions.

Kidneys: Left. Somewhat adherent to the fatty capsule. It has a single ureter. It has a large vessel coming to the lower pole which is an aberrant artery. Kidneys otherwise negative.

Superenal glands: Left is normal size. Cut section shows small adenoma about 7 or 8 mm. in diameter in the mid-portion. Right is of normal size, shape and consistency and cut surface.

Abdominal aorta: Normal.

Bladder and prostate: Not enlarged. Bladder contains small quantity of turbid urine with some fat flating on it. Mucous membrane is stained with blue.

Anatomical lesions: 1. Chylothorax, right. 2. Rupture of the thoracic duct just about the receptaculum. Dilatation of right side of the heart. 3. Chronic passive congestion of the liver. 4. Perforated ulcer of the stomach. 5. Adenoma of left super-renal gland. 6. Chronic appendicitis with adhesions. 7. Osteo-arthritis of dorsal spine.

Probable cause of death: Chronic myocarditis with dilatation of heart.

Chylothorax is a rare condition, true traumatic chylothorax extremely rare, as is shown by the sparsity of such cases in the literature. Funk, quoted by Felts(1), in 1918 found reports of two cases and reports one case, making a total of 54 up to that time. Often a chylothorax is due to rupture of one of the larger lymphatics, or to some form of disease, so that a true traumatic rupture of the duct in the pleural cavity is likely one of the most rare surgical lesions. Quite a large number of cases of injury to the duct in the neck are reported, a majority of these happening during operations. Watts(2) reports a case of severance of the upper portion of the duct in the left pleural cavity by means of a self-inflicted knife wound, resulting in chylothorax.

Most cases of traumatic chylothorax are due to violent trauma to the chest or back, fracturing ribs or vertebrae.

The physical findings are those of simple pleural effusion. Aspiration, of course, with clinical examination of the fluid, makes the diagnosis. Associated symptoms are cardiac displacement and often embarrassment, dyspnoea, progressive weakness and loss of weight; rather rapid re-appearance of the fluid in the chest out of proportion to the fluid intake, and finally death from exhaustion due to the loss of chyle.

It is obvious that treatment is unsuccessful. Due to lack of any means for locating the point of rupture and the inaccessibility of the thoracic duct, radical surgery is highly impractical.

SUMMARY

1. Report is made of a case of traumatic rupture of the thoracic duct in the pleural cavity, proven by autopsy.
2. Practically eleven litres of chylous fluid was removed from the right pleural cavity in four days.
3. There was rapid re-appearance if the fluid after each aspiration.
4. Death follows due to loss of chyle and consequent exhaustion.

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"OMENTITIS HYPERTROPHICA", A NEW CLINICAL ENTITY*

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The pathology of the omentum receives little consideration in literature. Keen's system of surgery mentions only cysts, omental herniae, torsion, gangrene and tuberculosis. Acute omentitis as a part of a local or general peritonitis is common. Chronic simple omentitis (non-tuberculous) is not mentioned and nothing is said of hypertrophy or incarceration except when associated with hernia.

A hypertrophic incarcerated segment of omentum contained within a hernial sac is described in Keen's surgery. The gross and microscopic character of the omentum in such cases is apparently similar to the lesion reported herein.

Three patients in whom I have observed hypertrophic inflamed omentum presented identical clinical pictures.

1. They had excessive generalized adiposity.
2. Each had previous sub-umbilical celiotomy with pelvic surgery.
3. All had severe lower abdominal pain and excruciating tenderness especially on bimanual examination with a fullness and resistance in the pelvis suggestive of a tumor.
4. The hypertrophic incarcerated omentum was the only lesion found.
5. Complete relief from pain and tenderness followed excision of the involved omentum.

The definitely abnormal omentum at the site of pain, the absence of any other pathology and the complete relief experienced after partial omentectomy warrants the conclusion that there is a distinct entity as a late sequelum complicating pelvic surgery, due to chronic localized omentitis.

The Lesion: The entire omentum is thick and heavy in conformity to the general adiposity of the patient. The involved portion, however, is much thickened and firmer than normal. The density is such as to suggest tumor, but the tissue is diffuse and uniform, consisting only of a more closely packed fat tissue in the omental stroma. The color varies from the normal only in that it is deeper yellow. The soft fatty normal omentum is changed to a firm resistent structure. It is molded into the form of the space in which it lies and retains this contour when dislodged. The pliability of the normal omental fat is lost. It is seen wedged in the pelvis either as a unilateral mass of omentum or as a bilaterally lobated segment. It may be almost pedunculated by narrowing of its upper attachment to the remaining omentum. The shape is partly determined by the contour of the pelvic cavity and in part by traction due to its fixed position. It was adherent in one case and in two it was merely incarcerated or wedged into its retaining fossa. Moderate traction delivers the incarcerated omentum from the pelvic cavity, although, that it had been abnormally retained during a long residence in this situation is clearly evident from its molded fixed contour.

Microscopically there appears to be little if any deviation from the appearance of a normal fat-infiltrated omentum.

Symptoms: The objective symptoms are largely negative. These patients are moderately obese. They have good color and are free from any evidence of toxicity. The appearance of good health is at variance from their bitter complaints of distress. A suspicion of neurasthenia is apt to be aroused because of this discrepancy and perhaps some of these patients have been cataloged as such. There is no fever, chills, rapid pulse or abnormal laboratory findings. The lower abdomen, especially in the sides, is extremely tender and bimanual examination reveals excruciating tenderness. Tenderness was so great that pelvic examination was unsatisfactory, but a resistance and palpable mass in one or both sides was suggestive of tumor. In two cases a tentative diagnosis of ovarian cyst was made. The masses were only indistinctly palpable because of the tenderness.

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*From Department of Surgery, Lincoln General Hospital.

The subjective symptoms are pain and tenderness. The pain is almost constant and is in the lower abdomen. It is variable in degree; at times merely soreness and at other times very severe pain. Work and jarring aggravates it. There may be severe paroxysms of pain simulating acute appendicitis or torsion of an ovarian cyst but with no chills, fever or leucocytosis. In the three cases reported here, all had a previous operation with apparently good recovery. The pelvic pain and distress began several months or years after the operation. One patient had frequent headache and was always constipated. The most striking fact is the constancy of long continued pelvic distress unassociated with impaired health or evidence of toxemia.

The chief complaint is pelvic pain. In one case this was lateral, in the other bilateral. The pain is of persistent long-continued ache of variable intensity with marked local tenderness. In one case there were several acute attacks of pain of a few days duration simulating salpingitis or oophoritis, but lacking chills, fever and leucocytosis. In all cases stress was laid on the constancy of the pelvic distress and soreness unassociated with evidence of general deterioration of the health or of sepsis. All had the appearance of good health and were rather adipose.

Diagnosis: The diagnosis can only be tentative except by exploratory laparotomy. The condition should be suspected in patients who have undergone a pelvic operation, especially if they are obese and if there is marked pelvic distress and tenderness with unimpaired general health. Immediately after laparotomy the relation of the omentum to the pelvic viscera and the character of its lower portion should be noted. Failure to find expected pathology should direct attention to the omentum. The diagnosis is established if the lower segment of the omentum is thick, hard and incarcerated into the pelvic space.

Treatment: Excision of the involved segment of omentum effects a cure. In the three cases reported relief was immediate and complete, evidently substantiating the belief that the condition described was in fact the cause of the clinical manifestations.

Prophylaxis: The custom of many surgeons who pull down the omentum and tuck it into the pelvis to separate the freshly operated area from intestines may possibly predispose to hypertrophic omentum.

Case 1, Mrs. H. F., age 24, married.

Three years previously had left salpingectomy because of ruptured tubal pregnancy. Two years ago the right tube and ovary and appendix were removed because of inflammation following miscarriage. Excessively nourished, adipose, general appearance healthy.

Complaint: Constant soreness in the lower right abdomen. There is variation in intensity but seldom a complete remission. It is intensified by exercise, work and car riding. There is no fever, chills or malaise. Aside from the distress her health is good. After a long auto ride the pain became extreme, required rest in bed and opiates. Palpation over the right illiac area ellicited extreme tenderness. Bimanual pelvic examination revealed an excruciatingly tender mass in the right side of the pelvis which could not be clearly outlined because of the tenderness. The impression was that of a cystic tumor about the size of an orange. The temperature and pulse were normal and leucocytes were not increased. Cystoscopy and pyelography had been recently done with negative results. This attack persisted with little abatement for 10 days when the patient consented to an exploratory operation.

The uterus and stumps of the broad ligaments were normal. Adnexa previously removed. The lower portion of the omentum was large, thick and harder than normal situated wedge-like in the right side of the pelvis. There were few adhesions. The molding of this segment suggested long residence in its position. The consistence was abnormally hard. No other pathology was found in the abdomen after careful search. The pendulous lower portion of omentum was excised. The subsequent history indicated complete relief of her symptoms.

Case 2, Mrs. P. P., married, age 43.

Fifteen years previously double salpingo-oophorectomy. She was fairly comfortable until several years ago when pain and tenderness of lower abdomen and backache began. General health good otherwise. Good appetite, well nourished, normal strength and ambition. Has no fever, chills or malaise. In spite of being apparently well otherwise she always has a tender lower abdomen and constant distress. Two years ago a physician examined her and reported that in each side of the pelvis a tender tumor that felt like a cyst was palpated. Recently the pain, tenderness and backache have increased and the patient thinks her abdomen is enlarging. Pelvic examination at this time revealed tender masses almost filling the pevis. They had the consistency and feel of cysts but could not be outlined because of the tenderness. A small atrophic uterus was palpable distinct from the tender masses.

At operation the uterus was infantile in size, the stump of the broad ligaments were non-adherent to any structures and the large heavy incarcerated omentum was the only pathology found. The lower segment of the omentum was broad, thick and heavy. The infiltrating fat was dense. At each side there was greater thickening and enlargement, the resulting mass presenting the molded form of the pelvic cavity.

The hypertrophic omentum was excised. Recovery was uneventful with complete relief of previous symptoms.

Case 3, Mrs. C. D., married, age 40.

Right salpingectomy and partial oophorectomy 5 years ago. General adiposity, apparently good health. No fever, chills, leucocytosis or toxemia. Laboratory findings negative. Beginning 1 year after operation constant long continued ache in right lower abdomen and pelvis. Marked tenderness, pain aggravated by auto rides or heavy work. Bilateral examination revealed very tender right adnexal region with indistinct mass. Uterus separately defined and apparently normal.

Operative findings: Uterus and left adnexa normal. Stump of right tube and scar of ovary. The omentum was adherent to line of subumbilical incision and the right lower segment was dense, thick and incarcerated in right pelvic cavity. No other pathology. Excision of involved omentum. Complete recovery.

CONCLUSIONS

A distinct clinical entity "Omentitis Hypertrophica" in which the essential pathology is an incarcerated thickened segment of omentum lodged in the pelvic cavity is recognized as a cause of pain and distress unassociated with general impairment of health. Its association with previous pelvo-abdominal operation is noted. Consideration of it as a possible etiologic factor is advised in any case when the operative findings do not disclose the expected pathology.

LOW BACK PAIN

John T. O'Ferrall, New Orleans (*Journal A. M. A.*, Aug. 25, 1928), concludes that the majority of the acute and many of the chronic backaches occur in young adults below the age of 45 as a result of sprain of the lumbosacral ligaments. The strain generally occurs more frequently in males engaged in laborious work, athletics and others in awkward posture, namely, flexion, semiflexion and twisting of the torso, especially on impending muscular effort, as lifting and pushing. The lumbosacral joint is normally a most unstable joint and in studying its anatomy insufficient emphasis has been placed on the ligamentous "guy-rope" and the relation of the bony structures to one another, whereas undeserved importance has been given to the bony abnormalities. Gross pathologic changes exist, as hemorrhage; fibrous adhesions or pannus formation and swelling of the ligaments with pressure on the lumbosacral cord and other parts of the lumbar plexus; protective tonic spasm of the lateral spinal muscles from nerve pressure, and often toxic absorption. Flat roentgenograms are of little value. Stereoscopic and lateral views of the joint are very helpful and probably essential. Treatment to be effective must represent fixation of the lumbar spine to the pelvis, thoroughly carried out and prolonged for a sufficiently long time to permit healing of the truly sprained ligament and resolution of the pathologic changes that usually occur

A DISCREET DADDY

By S. E. Kiser

My daddy's always telling me
About how good he used to be;
He did what he was told to do,
And he was neat and tidy, too;
He learned his lessons every day,
And he would rather work than play;
But when my grandpa's visiting
With us, my daddy, if I'm bad,
Forgets to say a single thing
About his goodness as a lad.

My daddy says he never told
A fib or made his parents scold
Because he did things that were wrong;
He always tried to help along
By being good and kind and sweet
And eating what boys ought to eat;
But when my grandpa comes and when
My daddy never boasts to me
About how good and sweet and dear
A little boy he used to be.

My daddy always took delight
In doing only what was right
When he was just about my size;
He wanted to be great and wise;
But when my grandma comes and when
My grandma's here to visit, then
My daddy merely gives a wink
Or smiles, if I've been kind of wild,
And doesn't try to make us think
That he was once an angel child.

—Harper's Magazine.

IMMOBILIZATION IN PULMONARY TUBERCULOSIS: PRELIMINARY REPORT OF NEW METHOD

S. C. Davis, Tucson, Ariz. (*Journal A. M. A.*, Aug. 25, 1928), suggests that in incipient cases of tuberculosis local as well as bed rest be instituted. Until phrenicotomy and pneumothorax become more popular, a simple but effective appliance should be used. In cases in which pneumothorax is impossible or is refused, in which the pathologic changes on the opposite side contraindicate its use, or in which there is involvement on both sides, one side can be given local rest until improved, and then the other side can be treated. This appliance is especially indicated when the disease condition is at or near the base, whether it is tuberculosis, bronchiectasis or nonsurgical abscess. He describes his appliance.

"Life isn't a spurt, but a long, steady climb. You can't run far uphill without stopping to sit down. Some men do a day's work, and then spend six lolling around admiring it. They rush at a thing with a whoop and use up all their wind in that. And when they've rested and have it back, they whoop again and start off in a new direction."—George Horace Lorimer.

If brevity is the soul of wit, the skirt has reached the end of the joke.

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THE PROBLEM OF STATE HOSPITALS FOR INSANE

The state care of the unfortunates is a duty that cannot be shirked and it should be considered a privilege to do it as well as it is possible to do it. Any kind of care is not good enough: the best is none too good. Nebraska is a young and growing state and with the growth of the state and the increasing number of unfortunates the demands on state institutions for the unfortunate have outgrown the capacity to care for them. This is true of all the institutions in the state and is particularly true of the state hospitals for the insane with which we are at this moment concerned.

Additional buildings are needed at each one of the three institutions under consideration to house the growing number of unfortunates that are being committed from the various counties. One of the institutions, for example, has had the male wards filled to capacity for many months and has had to decline or defer patients whose condition called loudly for institutional care. County jails are not fit places for such people and proper home care is often impossible, even if proper restraint is possible, which it usually is not.

Our duty, therefore, seems plain. The legislature, about to convene, must provide additional room for patients and, we, the people, must encourage them to do so and fully support them in their efforts. We must be more liberal with our state institutions.

Probably a million dollars is needed for building additional wards, rebuilding and improvements in the three institutions. Let us hope the legislature will provide for the needs whatever the amount may be. We are spending ten or more million dollars on a new capitol building which will be a work of art of which the civilized world shall take notice. Shall we neglect the wards of the state while we spend millions on a work of art, which after all is but a bauble?

The hospital problem has another phase, not generally known to the public. The Nebraska State hospitals are conducted at less expense per capita than the average of other states. The salaries of the officers and particularly of the physicians are less than in other states. Every state adjoining Nebraska pays higher salaries. The salaries of superintendent and assistant physicians have not been altered since Nebraska emerged into statehood in 1867. The following table graphically portrays the comparison between Nebraska and other states in the matter under discussion. The figures are derived from a survey made over the United States and embody replies received from 123 hospitals in 43 states and are, therefore, fairly representative:

	Average of 123 Hospitals	Average for 3 Nebr. Hospitals
Average ratio of employees to patients	1-7.19	1-8.7
Average salary of Superintendent	390.08	208.33
Average salary of Asst. Supt.	255.25	140.00
Average salary of Steward	207.51	133.33
Average salary of Hospital (Includes Officers and Employees With Maintenance)	72.78	63.10
Average monthly per capita cost	24.77	19.59

In 84 institutions out of 123, automobiles are furnished the superintendent by the state. In 8 institutions the superintendent's car is fully maintained.

It is nothing short of disgraceful that the great state of Nebraska pays its superintendents but $2,500 and a living. Nobody but men thoroughly in love with the work and, therefore, willing to sacrifice themselves and their families, can be expected to take and hold the positions. The salary is not compensatory. No superintendent should be expected to assume the obligations of of the place short of a salary of $5,000 and a living. The problem of the assistants is just as much involved. The institutions call loudly for specially trained men to do the work according to the latest in modern methods and these men are hard to get with the small salaries paid in this state.

A boost of salaries and additional room are imperative if Nebraska is going to do its full duty by the wards of the state hospitals for the insane.

FRANK S. OWEN

Dr. Frank S. Owen was born in Medina County, Ohio, November 13, 1856, attended the country school until seventeen years of age, then, after one year at normal school, taught the home school four months each winter for four years, attending Oberlin college the balance of each year, and one additional year. He was graduated from the Medical Department of the University of Michigan at Ann Arbor in 1885 and immediately located at Stromsburg, Nebr., where he was married and where he remained until 1890 when he went to New York, London and Paris for special work in diseases of the eye, ear, nose and throat. He returned to this country in the fall of 1891 and located in Omaha. He was professor of laryngology and rhinology in the Omaha Medical College and the University of Nebraska College of Medicine from 1896 to 1927 when he was made professor emeritus. He is an ex-president of the Omaha-Douglas County Medical society, and ex-vice president of the American Academy of Ophthalmology and Oto-Laryngology and a Fellow of the American College of Surgeons. Dr. and Mrs. Owen have two sons and two daughters, of whom one son, Dr. Donald, is associated with his father in practice.

Greetings from Your New President

As your president for the coming year, I wish to extend my greetings to the entire membership of the Nebraska State Medical Association and assure you I am deeply appreciative of the honor conferred on me.

I feel assured that, buttressed by our past years of solid achievements, with a united membership, working as a harmonious whole, we can expect to accomplish much during the next twelve months towards attaining the objectives we have set before us.

We have dedicated ourselves and this organization to work together for these objectives, the chief of which are: The continued progress of our profession, a better appreciation among the laity of the problems that confront us, and a more intelligent understanding and practice among the public of preventive measures.

As in the past, we will lay aside all motives of self interest, eschew all political ambitions and work as a co-ordinating group of individuals along broad humanitarian lines.

Our road is before us, strewn with obstacles, it is true, but none of them are insurmountable. We have traveled far on it, and as we have advanced, the way has become smooth and well marked for all to follow. There is still far to go, but with the continued co-ordinated effort of all of our membership and the growth of mutual understanding, greater progress will be made this year than ever before.

I am at your service.

FRANK S. OWEN

THE ANNUAL CONFERENCE OF SECRETARIES IN NOVEMBER

The problems of the profession, personal and organizational, were pretty well threshed out at the annual conference held at the A. M. A. headquarters in Chicago, November 16 and 17th last.

Dr. M. L. Harris, Chicago, President-elect of the American Medical Association, spoke of the cost of medical care and the study of the problem now in progress. Adequate scientific service to people at a price they can pay is the great problem. Dr. Harris thinks there is need within the medical society for an organization for business purposes. A health institute in Chicago has made a hundred thousand dollars a year profit on the basis of patients paying what they can, according to circumstances. If organizations of this kind can do these things why cannot the organized profession do as well?

State medical organizations came in for thorough discussion. Dr. H. H. Shoulders, secretary of the Tennessee State Medical Association, said efficiency must come from organization. Officers must put heart and soul into the work. If the heads of the organization are efficient the society will function efficiently. Practical programs—not too much "high brow material in program"—said Secretary West of the A. M. A. The program came in for much discussion and it was said that papers by local men are of some value as giving the local men a chance for development and to maintain interest in the society, but that medical men of authority are best on the program. Much depends on the program committee.

Dr. A. H. Bunce of Atlanta, outlined the policy of the Georgia society and the same is here given because the society is similar in numerical strength to the Nebraska society. The policy in Georgia is to have two invited guests and one section. Lobby visiting and too many social features are frowned upon.

The publicity work done by the Illinois society is of interest. The society maintains an educational bureau. Censored radio talks have been broadcasted regularly for the past 18 months. Press articles, censored, go to over 100 papers regularly.

As evidence that large number of members are not necessary to make a county society function successfully, an instance was cited of a county society of 8 members having regular meetings and being regularly attended by 125 physicians from the surrounding territory.

Secretary Adams featured the Nebraska State Medical Association's Health Exhibit at the State Fair and was listened to with great interest, the work being new to other states. Secretary Adams is one of the foremost men in the conferences and his work is not as fully appreciated at home as it deserves to be.

The lack of contacts with county and district societies by higher-ups was regretted by secretary Donahue of New York. These contacts should be cultivated.

ELIGIBLE NON-MEMBERS

During the past month the secretary-treasurer has circularized certain members of the profession who should, but do not, belong to our association, in an endeavor to increase the membership. A copy of the letter follows and is interesting reading to all as it beautifully summarizes the recent accomplishments of organized medicine. Members in the several communities should follow up this letter by personal interviews with eligible non-members, clinch the argument and prevail, if possible, upon such non-members to become a part of organized medicine:

Dear Doctor:

Your name has been sent to us as a doctor who is eligible to membership in our Association but who does not belong. We are writing to try to induce you to become a member.

Doctor, do you realize that:

1. It was organized medicine which caused the passage of the Basic Science Law at the last legislature?
2. It was organized medicine that has for several years prevented any bad medical laws from being passed?
3. It was organized medicine that caused the license fee under the Harrison Law to be reduced to $1.00?
4. That it was organized medicine that finally won the fight allowing doctors to deduct traveling expenses to professional meetings from their income tax returns?
5. It is organized medicine that is conducting the campaign of education in this state, through the State Fair and State Normal Schools, which is already having a good effect towards restoring the doctor to his merited place in the community?

Doctor, can you afford to not be a member? By doing so you silently give aid to the cults and others who are continually trying to tear us down. See the secretary of the County Society in your county, get an application blank from him and become a member.

Sincerely yours,
R. B. Adams, Sec'y-Treas.

ANNUAL DUES

Your dues to the Nebraska State Medical Association are due January 1, 1929. Send $8.00 plus your County Society dues to the Secretary of your local county.

CALL FOR PAPERS

Members who wish to read papers at the annual meeting in May should send their name and the title of their papers to R. B. Adams, secretary-treasurer, Center McKinley Building, Lincoln, Nebraska.

SOME EARLY DAY PROFESSIONAL CONTACTS—(Concluded)

On a mild early spring evening, I answered a confinement call five miles away. A storm was brewing. I was ready to return home about 2 a. m. When I asked for my team, the husband suggested that it was extremely dark and it was going to storm presently and urged me to remain until morning. Such a thing as being unable to travel on account of darkness I had never experienced and I insisted on going and did so. No sooner had the lantern light been turned from the team that we were in stygian darkness and the horses were against the wire fence. I turned them to the right and they crossed the road to the fence on the other side. With the greatest difficulty and by the aid of the flashes of lightning I managed to zigzag my way to the crossroad two miles south, but by that time it was not only raining hard, but snow in large wet flakes came with a terrific northeast wind across my path. I turned the horses to the east but could not hold them to the road on account of the fury of the windswept wet snow which blinded them. I thought to lead them along the wire fence, but they woud not respond. Finally I decided there was but one thing left to do—tie them to the fence, blanket them, seek the protection of the buggy-top and await the morning light or the subsidence of the storm. This I did and although thoroughly wet, fell asleep for a time. The storm turned entirely to snow that blocked the roads for several days, but by the early morning light I managed to get the horses to move toward home.

Before the days of the telephone and the auto a confrere aroused me after midnight and asked me to go with him to a confinement case, a transverse presentation, and bring chloroform as he had used all he had with him. He explained that he could not correct the position and that an arm presented and not being able to replace it he had amputated it. Having done this he left the woman lie there and came after me.

He explained his inability to deliver with the story that his hand got cramped and disabled him. On reaching the house I asked him what he wished me to do. He said his hand was better and if I would give the chloroform he thought he could deliver. I did so. He did not bring the patient's buttocks to the edge of the bed—and, of course, failed to accomplish anything. He said I might try it. Bringing the patient into proper position and sterilizing my hands I grasped a foot and had the child delivered in less than ten minutes.

A month later when the husband came to pay me he objected to my charge of twenty dollars as being too much in proportion to what his physician, who was there most of the night, charged. This angered me and I blurted out that if I could do in ten minutes what he could not do the whole night I thought I was entitled to the pay. He paid and ever afterward employed his first choice physician.

Dan Dee was an ignorant brutal man, who it was said, in pre-homestead days, had served a term in the Joliet penitentiary for killing a man. The entire family of children were illiterate, although possessed of enough native shrewdness to acquire considerable property. On Thanksgiving evening Dan dropped dead at the supper table. A neighbor was called, the body bathed and dressed and placed in a cold room and the windows opened to cool the body. Following this, one of the boys drove to my office and asked me to go out to see whether father was really dead. I declined to go. The funeral occurred on a very stormy day and the widow became ill after the exposure and developed pneumonia. One of the grown sons came for me on horseback. I had been called away in consultation and would not return until night. He asked my wife what he should do. She told him to get one of the other physicians and mentioned one by name. Now, shortly before this episode a young woman in that neighborhood had died of puerperal sepsis, under the care of the other physician, and there had been plenty of neighborhood talk about the event. The son said: "But he might kill mother". Reassured, he called the other physician who drove an open buggy. The son asked to ride with the physician and lead his pony which was granted. On the way home, which was more than an hour's ride, the son talked of nothing but of his father—what a good father he had been, how kind, and how they would miss him. When they were driving into the farmyard, as a grand *finale* he said—"Vell, if he vas life, he vould not be det".

THE EVOLUTION OF CLINICAL MEDICINE AND SURGERY IN RELATION TO THE PRESERVATION OF HEALTH AND LIFE

Franklin H. Martin, M. D., Chicago, in his Inaugural Address before the American College of Surgeons, Symphony Hall, Boston, October 8, 1928, speaks of the evolution of scientific clinical medicine and surgery; the benefits that accrue therefrom to the public where accepted; and the grave dangers that attend the acceptance of services and teachings of irregular practitioners who represent unsound cults and quackery.

Outstanding conclusions suggested by address:

a. Extension of longevity from average of 58 years in 1920, to 65 years in 1930;

b. Extension of middle life to a marked degree (conservatively estimated) to an average of 80 years by 1935;

c. Extension of average old age upper limit, at present approximately 90 years, to an undetermined average, conservatively to 100 or 110 years by 1940 or 1950;

d. The degenerative diseases, the principal causes of senility, begin at 45 years, the most useful period of life;

e. Sudden deaths from diseases in middle life are due to neglected degenerative diseases;

f. Yearly examinations by one's own scientific doctor will detect early beginnings of degenerative diseases of middle life, and appropriate treatment will prevent or postpone their development.

g. Periodic health examinations, which guard against all preventive diseases, and many curable diseases, are urged upon old and young. An examination on the birthday is urged.

h. Orgies, and over indulgence in eating and drinking, rather than overwork, destroy health and shorten life.

i. The campaign urging the public to seek yearly examinations has increased the number of examinations from 5,000,000 in 1920, to 20,500,000 in 1928.

j. The 18th Amendment. More than two-thirds of our people morally and spiritually favor the 18th Amendment of the United States Constitution. In spite of the injudicious administration of this 18th Amendment, which has resulted in an orgy of law breaking, of self-indulgence, and ridicule on the part of the other one-third of our citizens, the foundation has been laid for a demonstration of race betterment and extension of life that will astonish the world.

EDITORIAL PARAGRAPHS

Under the New York law, interpreting x-ray plates is practicing medicine.

It is said that in Pennsylvania morticians are the greatest obstacle to getting autopsies.

The next meeting of the American Medical Association will be held at Portland, Ore., July 8-12, 1929.

Daniel Webster entered Dartmouth Medical College as a member of the class of 1801, but did not complete his course.

The first medical book published in America, "Opera Medicinalia", by Dr. Francisco Brava, was printed in Mexico City in 1570.

Successful transplantation of the cornea from one man's eye to another man's eye is reported to have been accomplished in a New York clinic.

Again, Dear Doctor, let us remind you to pay your dues. Your membership and your Journal are worth more to you than you fully appreciate.

To the long list of "days" such as Mother's Day, Father's Day and Father-and-Son's Day, Oakland, California, is said to have added "Doctor's Day".

New ads in this issue: Medical Arts Building; Anchor Products Co.; Paul Johnson. Read the ads and patronize the advertisers who make your Journal possible.

The growth of hospitals is well illustrated by the fact that in 1920 there were in the United States 4,000 hospitals and 400,000 beds; now there are 7,000 hospitals and 875,000 beds.

The November issue of *American Medicine* is a "Food, Diet and Nutrition Number" containing 29 articles, giving as complete a picture of modern nutrition and diet as space permits.

The Nobel prize for medicine for 1928 was awarded to Professor Charles Nicholle, director of the Pasteur Institute of Tunis, in consideration of his work on typhus, especially on the part played by lice in carrying the disease.

Health Commissioner Bigelow of Boston, *N. E. Journal of Medicine*, Nov. 22, believes that the removal of the gallbladder of a typhoid carrier cures the carrier condition. He asks that specimens of bile from typhoid carriers be sent to him for study.

The confidence of a child can usually be gained so as to allow the use of the stethoscope without resistance, by suggestion that the instrument is the doctor's telephone and by applying the mouthpiece to the hand or face of the nurse before applying it to the child.

The location of a veteran's hospital in Nebraska—at Lincoln—is due to the initiative and push of a well known country doctor, who gave of his time and substance, making several trips to Washington in the interest of the movement—Dr. F. L. Frink, medical reserve corps, present mayor of Newman Grove.

Dr. Albert Schneider, associate dean of the school of pharmacy of the North Pacific College of Oregon, died suddenly October 27 at the age of sixty-five years. Not many years ago Dr. Schneider was connected with the school of pharmacy of the Nebraska State University and contributed several articles to this Journal.

The Graduate School of Medicine of the University of Pennsylvania announces the opening of the newly built and newly equipped Chevelier Jackson Bronchoscopic Clinic of the Graduate Hospital of the University of Pennsylvania.

Clinical observation has repeatedly demonstrated that it is retention and overdistension rather than catheterization which causes bladder infection. A bladder may be repeatedly catheterized and unless there is retention it will not become infected; but if there is retention the most rigid asepsis in catheterization will not prevent infection.

The Colorado State Medical Society passed resolutions to the effect that to overcome prejudice against post mortem examinations the physicians be requested to order post mortems upon their own bodies to the end that they might with better grace ask for post mortems from the laity. That's different; but who will say the thought is not a good one?

Botulinus poison will kill in as small as one-two hundredths of a drop says Dr. W. G. Sackett, research bacteriologist of the Colorado Agricultural College. For this reason no canned food should be tasted before it has boiled at least ten minutes. The high pressure cooking of canneries is preferable to home canning, articles being more thoroughly sterilized by superheating.

Dr. Roger Lee, professor of hygiene at Harvard, says that organized and well conducted athletics, including even crew racing and football, do not injure previously healthy hearts. This in contradiction to the ghost of the athletic heart of the past, which resulted from badly conducted and violent athletics. The studies of the Metropolitan Life Insurance Co., point to the same conclusion.

In the famine district of China the International Famine Relief Commission has hit upon the idea of giving work to the famine sufferers whereby they may in part at least earn the relief. Ma huang, the Chinese herb from which ephedrin is made, grows by the roadside in Shansi province. The villagers are engaged, at a price somewhat above the local market, to bring in loads of this ma huang. Last year's purchase justified the scheme as non-pauperizing and self supporting. This year 200 tons were brought in.

Before the Nebraska State Medical Association meeting at Hastings last May, Dr. G. Alexander Young read a paper on Malarial Therapy in Paresis, published in the December issue. It is worthy of remark that two of the men, Dr. G. M. White and Dr. E. W. Powell, who entered into the discussion of this paper, have since passed to the Great Beyond. How forcibly this reminds us of the uncertainty of life!

The United State Public Health Service has broadcasted in *"Health News"* the story of "John Early, the Leper, Recovered". The story covers two typewritten pages of paper, of foolscap size, and may be summarized by stating that he was detained at Port Townsend, Washington, for a time, was confined four years in the District of Columbia and finally was sent to the National Leprasarium at Carville, La., from which institution he escaped several times only to be apprehended and returned. He has now been discharged as probably cured. The case is similar to the Nebraska case of Charles Young of Madison county. Young contracted leprosy while a soldier in the Spanish War in Cuba. He was discharged at Key West with some peculiar patches on his body, returned to Madison county and for several years was treated by different physicians for syphilis. He drifted to the clinic of the Creighton Medical College, was referred to St. Joseph's hospital where his true condition was discovered and returned to his home at Tilden. The county authorities took the matter in hand, built a small house on the county farm where he was kept for a time, when by means, not generally known, nor openly endorsed, he disappeared, went to the Pacific Northwest, where he remained several months, took passage on a steamboat for New York, then drifted to Washington, applied at the Pension Bureau for his pension, and was apprehended and kept confined there several years with Early, and finally was sent to the National Leprosarium at Carville, where he now is.

I was suffering from liver trouble and the doctor told me that if I laughed fifteen minutes before each meal, my condition would improve. One day in a restaurant, while having my little laugh, a man at the opposite table walked over to me and said in an angry manner:

"What the devil are you laughing at?"

"Why, I am laughing for my liver," I said.

"Well, then I guess I had better start laughing, too. I ordered mine half an hour ago."

HOSPITAL SERVICE IN NEBRASKA

(From Seventh Presentation of Hospital Statistics by the Council on Medical Education and Hospitals of the American Medical Association).

City, Pop.—County	Type of Service	Beds	Aver. Pts.	Control	Nu. Tr. Sch.	Supt. M.D. R.N. Lay	Yr. Est.
Ainsworth, 1,508—Brown							
Brown County Hospital	Gen	28	15	Indiv	No	M.D.	1922
Albion, 1,978—Boone							
Physicians Hospital	Gen	10	5	Indiv	No	M.D.	1920
Alliance, 4,951—Box Butte							
St. Joseph's Hospital	Gen	58	40	Church	Yes	Lay	1910
Alma, 1,058—Harlan							
Alma Hospital	Gen	12	3	Indiv	No	Lay	1919
Arnold, 933—Custer							
Arnold Hospital	Gen	12	4	Indiv	No	R.N.	1917
Atkinson, 1,300—Holt							
Atkinson General Hospital	Gen	10	8	City	No	R.N.	1925
Atkinson Sanitarium	Gen	6	2	Indiv	No	M.D.	1903
Auburn, 2,863—Nemaha							
Auburn Hospital	Gen	10	4	Indiv	No	Lay	1910
Aurora, 2,962—Hamilton							
Aurora Hospital	Gen	16	6	Part	No	R.N.	1916
Axtell, 394—Kearney							
Bethphage Inner Mission Assn.	N&M	124	112	Indep	No	R.N.	1913
Beatrice, 9,664—Gage							
Beatrice Sanitarium	Gen	25	15	Indiv	Yes	M.D.	1901
Nebraska Institution for Feebleminded	FeMi	860	850	State	No	M.D.	1884
Beemer, 548—Cuming							
Pierson Hospital	Gen	6	1	Indiv	No	M.D.	1907
Blair, 2,702—Washington							
Blair Hospital	Gen	15	4	Indiv	No	R.N.	1906
Broken Bow, 2,567—Custer							
Broken Bow Hospital	Gen	35	10	Indiv	No	M.D.	1923
Burkett, 20—Hall							
Nebraska Soldiers and Sailors Home	Gen	105	80	State	No	Lay	1888
Cambridge, 1,042—Furnas							
Republican Valley Hospital	Gen	25	10	Part	No	R.N.	1906
Central City, 2,410—Merrick							
J. E. Benton Hospital	Gen	10	4	Indiv	No	M.D.	1920
College View, 2,249—Lancaster							
College View Sanitarium and Hospital	Gen	40	10	Indiv	Yes	M.D.	1922
Columbus, 5,410—Platte							
St. Mary's Hospital	Gen	208	150	Church	No	Lay	1879
Crawford, 1,646—Dawes							
R. L. Ivins Hospital	Gen	10	4	Indiv	No	M.D.	1918
David City, 2,216—Butler							
David City Hospital	Gen	25	10	Indep	No	M.D.	1901
Fairbury, 5,454—Jefferson							
Taylor Hospital	Gen	20	7	Indiv	No	M.D.	1914
Falls City, 4,930—Richardson							
Falls City Hospital	Gen	35	9	Indiv	No	R.N.	1919
Farnam, 408—Dawson							
Reeves' Memorial Hospital	Gen	12	3	Indiv	No	M.D.	1925
Ft. Crook, 325—Sarpy							
Station Hospital	Gen	30	10	Army	No	M.D.	1896
Ft. Omaha, — Douglas							
Station Hospital	Gen	30	10	Army	No	M.D.	1868
Ft. Robinson, 613—Dawes							
Station Hospital	Gen	11	2	Army	No	M.D.	1874
Fremont, 9,570—Dodge							
Military Avenue Hospital	Gen	20	12	Indiv	No	R.N.	1924
Richmond Hospital	Gen	12	6	Indiv	No	R.N.	1923
Genoa, 1,069—Nance							
Genoa Indian School Hosp.	Gen	30	5	Indian	No	Lay	1886
Grand Island, 15,602—Hall							
Grand Island General Hosp.	Gen	25	16	Indep	No	M.D.	1913
St. Francis Hospital	Gen	180	145	Church	Yes	Lay	1886
Hartington, 1,467—Cedar							
St. John's Hospital	Gen	16	9	Indiv	No	M.D.	....
Hastings, 12,954—Adams							
Mary Lanning Mem. Hosp.	Gen	75	47	Indep	Yes	R.N.	1915
Hebron, 1,513—Thayer							
Blue Valley Hospital	Gen	25	20	Part	No	R.N.	1905
Imperial, 723—Chase							
Home Hospital	Gen	8	5	Indiv	No	R.N.	1925
Ingleside, 30—Adams							
Hastings State Hospital	N&M	1,385	1,343	State	No	M.D.	1888
Kearney, 7,702—Buffalo							
Good Samaritan Hospital	Gen	45	30	Church	No	Lay	1924
Hosp. for the Tuberculous	TB	130	94	State	No	M.D.	1912
State Industrial School for Boys	Gen	10	2	State	No	Lay	1880
Kimball, 1,620—Kimball							
Kimball Hospital	Gen	14	9	Indiv	No	R.N.	1919
Lincoln, 60,941—Lancaster							
Bryan Memorial Hosp. of the Methodist Episcopal Church	Gen	50	33	Church	Yes	M.D.	1926
Esther's Hospital	Gen	25	10	Indiv	No	M.D.	1908
Green Gables, Dr. Benj. F. Bailey Sanatorium	Gen	115	92	Indep	Yes	M.D.	1901
Isolation Hospital	Iso	22	6	City	No	Lay	1900
Lincoln General Hospital	Gen	130	78	City	Yes	R.N.	1924
Lincoln Hospital	Gen	30	11	Indep	Yes	R.N.	1904
Lincoln Sanitarium	Gen	100	70	Part	Yes	M.D.	1893
Lincoln State Hospital	N&M	1,157	1,088	State	No	M.D.	1870
Nebraska Orthopedic Hosp.	Ortho	115	113	State	Yes	M.D.	1905
Nebraska State Penitentiary Hospital	Gen	30	5	State	No	M.D.	1914
Roeder Maternity Home and Hospital	Mater	14	2	Indiv	No	Lay	1914
St. Elizabeth's Hospital	Gen	175	95	Church	Yes	Lay	1889
Dr. Shoemaker's Private Hosp.	Gen	15	5	Indiv	No	M.D.	1898
Lynch, 589—Boyd							
Lynch General Hospital	Gen	20	12	Indiv	No	M.D.	1922
McCook, 4,303—Redwillow							
St. Catherine of Sienna Hosp.	Gen	40	10	Church	Yes	Lay	1921
Milford, 792—Seward							
Milford Hospital	Gen	5	2	Indiv	No	Lay	1914
Nebraska Industrial Home	Gen	5	2	State	No	Lay	1890
Nebraska Soldiers and Sailors Home Hospital	Gen	60	40	State	No	Lay	1896
Nebraska City, 6,279—Otoe							
Nebraska City Sanitarium and Hospital	Gen	10	2	Indiv	No	M.D.	1923
St. Mary's Hospital	Gen	45	16	Church	No	Lay	1927
Newman Grove, 1,200—Madison							
Community Hospital	Gen	10	3	Part	No	M.D.	1920
Nofolk, 8,634—Madison							
Lutheran Hospital	Gen	50	40	Church	Yes	Supt.	......
Norfolk General Hospital	Gen	25	15	Indiv	No	R.N.	1915
Norfolk State Hospital	N&M	900	877	State	No	M.D.	1887
Verges Sanitarium	Gen	16	7	Indiv	No	M.D.	....
North Platte, 13,679—Lincoln							
Platte Valley Hospital	Gen	17	12	Indiv	No	R.N.	1913
Redfield-Dent Hospital	Gen	12	5	Indiv	No	M.D.	1925
Wurtele Hospital	Gen	15	8	Indiv	No	M.D.	1922
Oakland, 1,356—Burt							
Oakland Community Hosp.	Gen	12	7	Indiv	No	Lay	......
Omaha, 215,400—Douglas							
Bishop Clarkson Memorial Hospital	Gen	92	60	Church	Yes	R.N.	1883
City Detention Hospital	Iso	22	8	City	No	M.D.	1901
City Emergency Hospital	Iso	40	7	City	No	R.N.	1912
Creighton Memorial St. Joseph's Hospital	Gen	420	210	Church	Yes	Lay	1880
Douglas County Hospital	Gen	175	135	County	No	Lay	1888
Evangelical Covenant Hospital of Omaha	Gen	85	51	Church	Yes	R.N.	1905
Frederick Hospital	Gen	8	1	Indiv	No	M.D.	1917
Immanuel Deaconess Institute	Gen	250	76	Church	Yes	Lay	1890
Lord Lister Hospital	Gen	120	81	Indiv	Yes	Lay	1914
Nebraska Methodist Episcopal Hospital & Deaconess Home	Gen	200	151	Church	Yes	R.N.	1891
Nebraska School for Deaf	Gen	16	4	State	No	Lay	1869
Nicholas Senn Hospital	Gen	80	62	Indep	Yes	Lay	1912
Omaha Maternity Hospital	Mater	22	14	Indiv	No	R.N.	1915
Radium Hospital	SK&Ca	30	15	Indiv	No	M.D.	1920
Riverview Detention Home	Chil	7	2	County	No	Lay	1905
St. Catherine's Hospital	Gen	150	105	Church	Yes	Lay	1910
Salvation Army Women's Home and Hospital	Mater	8	3	Church	No	Lay	1896
South Side Hospital	Gen	25	10	Indep	No	R.N.	1894
Univ. of Nebraska Hosp.	Gen	120	116	State	Yes	M.D.	1917
Wise Memorial Hospital	Gen	75	60	Indep	Yes	R.N.	1901
Women's Detention Hosp.	Vener	20	12	City	No	R.N.	1918
Orchard, 444—Antelope							
Orchard Hospital	Gen	6	1	Indiv	No	R.N.	1918
Ord, 2,143—Valley							
Ord Hospital	Gen	20	12	Indiv	No	M.D.	1917
Palmer, 577—Merrick							
Coolidge Hosp. and Sanit.	Gen	5	1	Indep	No	M.D.	1916
Pawnee City, 1,595—Pawnee							
Pawnee City Hospital	Gen	29	20	Indiv	No	M.D.	1916
Pender, 992—Thurston							
Logan Valley Hospital	Gen	8	2	Indiv	No	M.D.	1912
Plainview, 1,199—Pierce							
Plainview General Hospital	Gen	8	4	Indep	No	R.N.	....
Plattsmouth, 4,190—Cass							
Nebraska Masonic Home	Gen	40	20	Frat	No	Lay	1903
Schuyler, 2,636—Colfax							
Kolouch Hospital	Gen	13	8	Indiv	No	M.D.	1922
Scottsbluff, 6,912—Scotts Bluff							
West Nebraska Methodist Episcopal Hospital	Gen	51	27	Church	Yes	R.N.	1924
Seward, 2,368—Seward							
Morrow Hospital	Gen	25	5	Indiv	No	R.N.	1902
Sidney, 2,852—Cheyenne							
Taylor Hospital	Gen	25	New	Indiv	No	M.D.	1927
Spencer, 728—Boyd							
Spencer Hospital	Gen	14	4	Part	No	R.N.	1905
Stratton, 509—Hitchcock							
Dr. Stewart's Private Hosp.	Gen	14	6	Indiv	No	M.D.	1902
Stromsburg, 1,361—Polk							
Home Hospital	Gen	8	4	Indiv	No	M.D.	1926
Stuart, 739—Holt							
Wilson Hospital	Gen	15	4	Part	No	R.N.	1920
Superior, 2,719—Nuckolls							
Superior Memorial Hospital	Gen	15	6	Indep	No	R.N.	1915
Table Rock, 750—Pawnee							
McCrea Private Hospital	Gen	10	1	Indiv	No	M.D.	1906
Tilden, 1,101—Madison							
Tilden Hospital	Gen	10	5	Indiv	No	Lay	1920
Walthill, 1,145—Thurston							
Dr. Picotte Memorial Hosp.	Gen	15	5	Part	No	R.N.	....
West Point, 2,002—Cuming							
St. Joseph Home for Aged and Hospital	Gen	15	6	Church	No	Lay	1905
Winnebago, 648—Thurston							
Winnebago Indian Hospital	Gen	60	35	Indian	No	Lay	1916
York, 5,388—York							
Evangelical Lutheran Hosp.	Gen	60	30	Church	Yes	R.N.	1914
York Clinic and Clinic Hosp.	Gen	15	3	Part	No	R.N.	1920

Total registered hospitals in Nebraska, 115; capacity, 9,359; average census, 7,104. Hospitals not admitted to the register, 9; capacity, 177.

THE SOCIETIES

Members of the **Gage County Medical Society** were entertained at dinner at the Institution for the Feeble Minded, Beatrice, November 14. The program consisted of a dry clinic and talks by a number of members.

The **Colfax County Medical Society** met at Leigh, November 30. Officers elected for the ensuing year are Dr. William Novak, Howells, president; W. J. Kavin, Clarkson, secretary-treasurer.

The regular monthly meeting of the **Otoe County Medical Society** was held at the Frontier Hotel, Nebraska City, December 10. Program: Spinal Anaesthesia in Surgery and Fractures, Dr. Donald McCrae, Council Bluffs; Acute Infections in Children, Dr. J. V. Treynor, Council Bluffs; Fractures of Both Bones of the Middle Third of the Forearm, Dr. R. D. Schrock, Omaha.

The Seward County Medical Society held its annual meeting December fifth over a banquet in the Chamber of Commerce rooms. Arrangements were made for associate membership of members of the dental profession. Dr. H. J. Wertman, Milford, was elected President; Dr. C. W. Doty, Beaver Crossing, secretary.

The Third Councilor District semi-annual meeting was held at Hotel Weaver, Falls City, November 22, with a full program as follows: "Myocarditis," Dr. John C. Thompson, Lincoln; "X-ray Diagnosis of the Gasto-intestinal Tract," Dr. Roy Fouts, Omaha; "The Gallbladder," Dr. B. B. Davis, Omaha; "Operative and Non-operative Brain Conditions," Dr. K. S. J. Hohlen, Lincoln; "The Purpose and Policy of the University Hospital," Dr. J. Jay Keegan, Omaha; "An African Travelogue." (With lantern slides.) Dr. B. B. Davis, Omaha.

Dr. A. P. Fitzsimmons, Tecumseh, was elected President and Dr. William Sheperd, Rulo, Secretary.

HUMAN INTEREST TALES

Dr. J. B. Williams has located at Polk.

Dr. J. F. Finegan has located at North Bend.

Dr. D. A. Foote, Omaha surgeon, has been reported seriously ill recently.

Dr. F. L. Frink, Newman Grove, brought home a deer from Montana recently.

Dr. and Mrs. J. E. Summers, Omaha, spent several weeks in San Francisco in December.

Dr. W. Claybaugh, formerly of Nehawka but recently from Colorado, has located at Union.

Dr. and Mrs. W. Howard Heine, Fremont, have returned from a nine months' stay in Vienna.

Dr. George H. Morris, and Dr. George E. Morris, father and son, Oshkosh, will establish a clinic.

Dr. C. J. Sturges of St. Paul, Nebr., has accepted a government position in the Panama Canal Zone.

Dr. A. P. Synhorst, recently of the Mayo clinic, has become associated with the Grand Island clinic as surgeon.

Dr. C. H. DeMay formerly of Shelton, after taking postgraduate work at the Mayo clinic, has located in Grand Island.

Dr. Alfred E. Reeves, Farnam, spent several weeks in Oregon hunting deer and brought home an abundance of venison.

"The problem of the crippled child," was the subject of two talks given before the Omaha Rotary by Drs. J. P. Lord and E. C. Henry.

Dr. J. P. Weyrens, with his son and daughter have taken passage on the Belgenland, from Los Angeles, for a six months' trip that shall take them around the world.

Dr. Lucien Stark, Norfolk, was one of the speakers at the dedication of the soldiers' monument on the grounds of the Norfolk High School, the middle of November.

Dr. H. A. Vandiver, Ogallala, announces the formation of a partnership with Dr. E. L. McCarter, late of Colorado Springs and the opening of a fifteen bed hospital the first of the year.

The Lincoln Fellows of the American College of Surgeons organized for the purpose of promoting and maintaining the surgical service of the various hospitals of Lincoln on the high plane demanded by the parent organization. Dr. J. J. Hompes was elected president and Dr. A. D. Munger, secretary.

NECROLOGY

George P. Wilkinson, Keokuk, Iowa; University of Pennsylvania, 1883; an eye, ear, nose and throat specialist in Omaha in the Eighties and Nineties; secretary of the Nebraska State Medical Society in 1895 and 1896, being succeeded by George H. Simmons; editor for several years of the Omaha Clinic, the first medical journal published in Nebraska; author of a number of books of a scientific nature; died October 2, 1928, of organic heart disease, aged sixty-eight years.

F. A. VanOsdel, Auburn, Nebr.: Ensworth Medical College, 1902; a specialist in eye, ear, nose and throat diseases and inventor of a tonsillectome; died December 3, 1928, aged about fifty-three years.

E. H. Smith, La Cumbra, Columbia; native Omahan; Creighton Medical College, 1912; conductor of a hospital in his adopted city; died November 29, 1928, aged about forty-seven years.

LENDING AID AND COMFORT TO QUACKERY

The federal officials, whose business it is to prosecute the exploiters of medical fakes and frauds, have for years complained that the government is much hampered in its legal assaults on quackery by the fact that physicians of standing will sell their expert testimony to the nostrum exploiters. Regardless of the nature of the evidence or opinion, the appearance of a reputable physician on the side of the quack may lead a jury to believe that the nostrums under consideration are worth while and that the claims made for them are true. Recently hearings have been held before the Federal Trade Commission in the matter of a quack "obesity cure" known as "Marmola". It is sold by one Edward D. Hayes, who, at the present time, does business under the trade name "Raladam Co." He has repeatedly been prosecuted for the exploitation of quack nostrums. Marmola, according to the exploiters, has essentially the following composition: Desiccated thyroid ½ grain, extract of bladderwrack (fucus vesiculosus) 1 grain, extract of phytolacca ½ grain, extract of cascara sagrada ¼ grain, phenolphthalein ¼ grain. For the government Dr. Charles A. Elliott, Solomon Strouse and Rollin T. Woodyatt testified as to the effects of the indiscriminate use of thyroid substance by the public. Not one of these three men charged the government a cent—they donated both their time and special knewledge. At a subsequent hearing Edward D. Hayes had expert witnesses to testify that Marmola was a scientific (!) preparation and that it was harmless when used according to direction. The men that testified to this effect were: Robert W. Keeton, Alonzo C. Tenney, Frank L. Stone, George W. Funck, Harold S. Hulbert, Samuel F. Haverstock. Each of these men is a member of his local medical society and, through that, has qualified as a Fellow of the American Medical Association. Here, then, is a sweet spectacle: The American Medical Association attempting to protect the public against quack remedies, while individual members lend aid and comfort to the exploiters of quack remedies. (*Jour. A. M. A.*, November 3, 1928, p. 1377).

COUNCIL ACCEPTS OPTOCHIN

In compliance with the request of the Council on Pharmacy and Chemistry the name "Numoquin" has been changed to "Optochin".

Optochin is used not only in the treatment of pneumonia but also in such condition as pneumococcic meningitis and pneumococcic serpiginous ulcers. In the treatment of pneumonia it is administered by mouth.

The theory upon which the treatment of pneumonia with Optochin Base is founded has evolved from the results obtained by a large number of investigators, and is outlined as follows:

The maximum bactericidal power of the remedy must be maintained continuously for a definite period—1 to 3 days—employing the minimum quantity of the remedy necessary for the purpose. It was found in practice that, provided Optochin Base is used, and given in doses of 4 grains every 5 hours, day and night, and further, provided the treatment is begun within 24 hours, or at least not later than the second day after the onset of the disease, the results are all that could be wished. The fever abates rapidly, the course of the disease is shortened and rendered milder, and the patients experience a sensation of euphoria, while the appetite and general condition improve.

The base is used because, being practically insoluble in water, it is but slowly taken up into the blood circulation. With every dose of Optochin Base about 5 ounces of milk are given. The milk prevents the too rapid formation of the more soluble Optochin Hydrochloride by the action of the hydrochloric acid secreted and thus assists in maintaining a uniform optimum concentration of the remedy in the blood. No other food or drink is given during the 3 days' treatment.

MEDICAL AND PHARMACEUTICAL CO-OPERATION

Perhaps one of the outstanding reasons for the progress in the scientific development of new products has been the spirit of co-operation which has existed between the medical profession and the pharmaceutical industry.

By this close co-operation medical science has contributed to pharmaceutical progress and the manufacturing pharmacists of the country in turn have made a definite contribution toward the development of new medicinal products.

On Wednesday, December 5, the officials and members of the medical, pharmaceutical and allied professions of Lafayette, Indiana were addressed by Dr. Charles E. Vanderkleed, Chairman of the Contact Committee, of the American Pharmaceutical Manufacturers' Association.

The subject of Dr. Vanderkleed's address was "Improvement in the Quality of American Drug Products due to Co-operation in the Industry". It is interesting to see the representatives of the several allied professions making arrangements for a periodical study of mutual interests of professional nature with a view to increasing mutual usefulness.

It is only through medical and pharmaceutical co-operation that the greatest advances can be made in conquering disease and improving the health of the American people.

A Scotchman, learning that a certain doctor charged $10 for the first visit and $5 for each succeeding visit, remembered a story he had read some time back and decided to try it out.

He breezed into the doctor's office and smiled happily.

"Hello, doctor," he cried. "Here I am again."

The doctor looked at him. Maybe he had heard the story, too.

"Here again?" he repeated. "I don't think I remember you."

The Scot nodded vigorously.

"You must," he cried. "I was in just two weeks ago and paid you $10 for my first visit."

The doctor looked long and hard. Then he suddenly smiled.

"O, yes," he chirped cheerfully, "now I recall. You're looking better, too. Just continue with the same prescription I gave you then."

SLAMS OF LIFE

The Flu

When your back is broke and your eyes are blurred,
And your shin bones knock and your tongue is furred,
And your tonsils squeak and your hair gets dry,
And you're doggone sure that you're going to die,
But you're skeered you won't and afraid you will,
Just drag to bed and have your chill,
And pray the Lord to see you through,
For you've got the Flu, boy,
You've got the Flu.

When your toes curl up and your belt goes flat,
And you're twice as mean as a Thomas cat,
And life is a long and dismal curse,
And your food all tastes like a hard boiled hearse,
When your lattice aches and your head's a buzz,
And nothing is as it ever was,
Here are my sad regrets to you—
You've got the Flu, boy,
You've got the Flu.

What is it like, this Spanish Flu?
Ask me, brother, for I've been through.
It is by Misery out of Despair;
It pulls your teeth and curls your hair;
It thins your blood and brays your bones,
And fills your craw with moans and groans,
And sometimes, maybe, you get well,
Some call it Flu—I call it hell!

—J. P. McEvoy.

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LOW BACK INJURIES*

FRANK D. DICKSON, M. D.,
Kansas City, Mo.

It is common knowledge that injuries to the lower back produce results which seem far out of proportion to the injury sustained. Furthermore, the resulting disability is too frequently a prolonged one, often ending in complete incapacity. In recent years, probably because of great industrial expansion and the introduction of the automobile, such injuries seem to have increased in numbers until the so-called "low back problem" has become a very important one. This is particularly true in industrial surgery, in the practice of which trauma to the back, the result of occupation or accident, constitutes one of the most difficult types of case encountered so far as restoration of function is concerned. The object of my paper today is to try to explain why this is so in some cases, and to suggest a method of procedure in these cases which should reduce the period of incapacity and lead to complete recovery, or as nearly complete recovery as possible. Some of the points in pathology may seem to lack definite basis of fact; all, however, seem to be true insofar as our personal experience has given us opportunity of judging, and can, I believe, be accepted as being approximately correct.

In the beginning, let me state clearly that although there are a number of conditions which cause persistent low back symptoms following injury to this region, it is my intention to discuss but one of these; namely, injuries to the lumbosacral articulation. The conditions which I wish to bring to your attention are the mechanical derangements which may occur in articulation when this important and little understood joint is subjected to trauma. That such mechanical derangements are responsible for persistent low back symptoms in a definite percentage of traumatic cases must, I believe, be admitted. What the percentage is, it is impossible at this time to estimate, certainly it seems safe to say that it is probably much higher than is generally supposed. Consideration of the relation of focal infection and systemic toxemia to traumatic low back conditions will be omitted as Dr. Schrock will cover this phase of the subject in his paper which is to follow.

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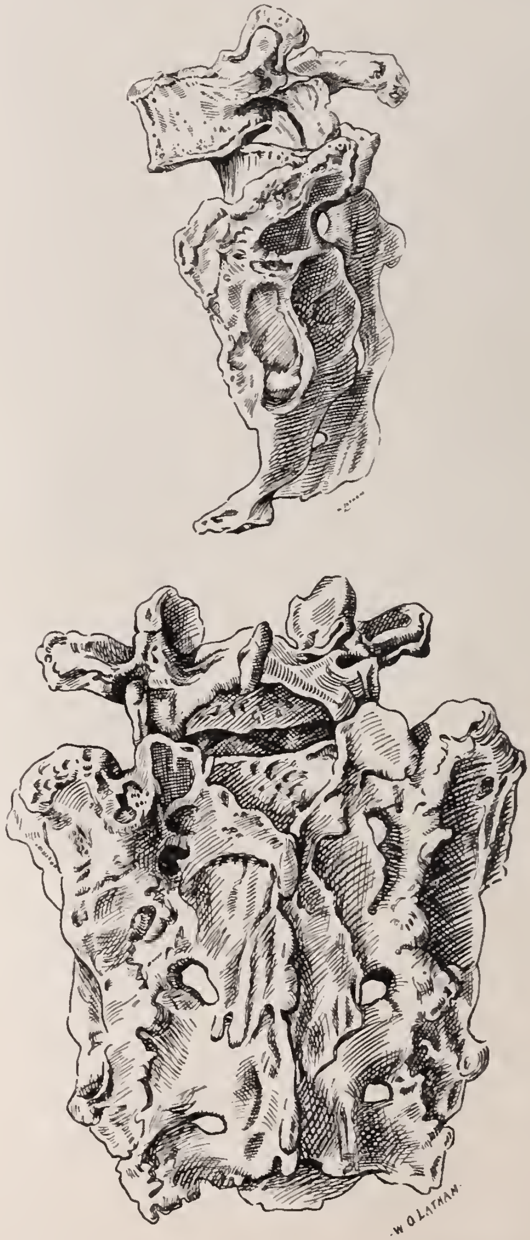
*Read before the Missouri Valley Medical Association, Omaha, October 31, 1928.

The lumbosacral articulation is a very important joint. Through this articulation, the weight of the trunk and upper extremities is transmitted to the pelvis. In addition, it plays an important role in spinal movements; Goldthwaite states that fully one-half the motion of the trunk below the lower dorsal region is made in this articulation. Finally the lumbosacral joint is the point of junction between the movable spine above and the more or less fixed sacrum and pelvic girdle below. This gives us a joint subjected to considerable stress, even under ordinary conditions. We have, then, a joint which must combine great strength with freedom of motion, a difficult combination. To meet these requirements, a definite type of joint is needed and a brief consideration of its anatomy will be worth while.

ANATOMY

The lumbosacral articulation in its main part inclines downward and forward about 42.5°, when the person is standing erect, and were it not for the presence of supporting structures the lumbar vertebrae would slide forward on the sacrum. These supporting structures are the articular facets of the sacrum into which the lower articular processes of the fifth lumbar vertebra fit, and the supporting ligaments. The articular facets in the lumbar region face practically inward and outward, with a slight convergence toward the front which blocks any slipping forward of the vertebra above on the vertebra below. The ligaments, particularly the iliolumbar which passes from the body and transverse processes of the fifth lumbar to the iliac crests, afford considerable support, but would soon become stretched and lose their supporting character if the major portion of the work were not done by these bony articular processes.

As stated, there is considerable motion at this joint, but chiefly in the direction of flexion and extension. In forward bending, or flexion, the motion at the lumbosacral joint is made partly by change in the shape of the intervertebral discs, but chiefly by the articulating processes of the fifth lumbar sliding upward on the opposing processes of the sacrum. With a joint acting in this manner, it is possible that if flexion were carried too far, as for example by certain forms of trauma, the articular processes of the fifth lumbar might slip entirely off those of the sacrum, allowing the vertebra to slide forward and a condition of spondylolisthesis or partial spondylolisthesis be produced (Figs. 1 and 2). If such a



Figures 1 and 2—Showing diagramatically slipping forward of the 5th lumbar vertebra on the sacrum.

displacement were to occur on one side only, the displaced articulation would slide forward and to the outside, and the fifth lumbar vertebra, carrying with it the entire spine, be rotated forward on the side of the displacement (Fig. 3).

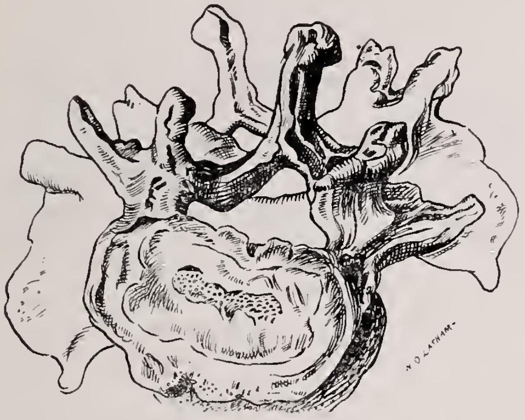


Figure 3—Rotation of the 5th lumbar vertebra on the sacrum due to slipping forward of the articular process on one side.

Such displacements might occur due to trauma by which the body was bent sharply forward, or forward and to one side. With the strength of this articulation and its supporting ligaments, it is almost inconceivable that such a displacement could occur without producing a fracture unless there were contributing factors present which would tend to weaken the joint and so decrease its stability and render it more vulnerable to injury. It is the presence and character of these contributing factors and the part they play in the causation of persistent low back symptoms that I wish to emphasize in considering injuries to this region.

A critical survey of the low back cases which have been diagnosed injuries to lumbosacral articulation in our clinic has led us to conclude that while there are a variety of conditions which could be considered as factors in causing weakness in this region, and so favor displacement of this joint when subjected to trauma, there are certain of these which seem to be more important. We will discuss these in some detail and the others in a cursory way.

The conditions which most commonly seem to cause weakness of the lumbosacral joint we have placed in two groups:

1. Increased sacral inclination.

2. Congenital abnormalities and deficiencies, such as abnormalities of the articular processes of the fifth lumbar vertebra and sacrum, spina bifida occulta, spinal clefts, enlarged transverse processes, sacralized transverse processes and enlarged spinous processes.

Many different opinions are held upon the importance of the part played in the persistence of back symptoms following injury by the conditions cited above. There are those who would ascribe to one or the other of these most of the blame; there are others who would deny that any of them play a role of importance as a contributing factor in low back disability. Our experience leads us to believe that if we omit from our discussion such conditions as osteo-arthritis of the spine, a fairly common condition, general toxic conditions, tuberculosis and neoplasms, one of these pathological conditions will be found as the basis of most of the low back injuries presenting a history of long continued disability. All can be shown to tend to cause decreased stability of lumbosacral articulation in one way or another, and in the discussion we will attempt to indicate the manner in which each acts, and its relative importance, as we have studied them.

Increased sacral inclination: This is due in most instances to incorrect posture from a variety of causes, coupled with a favorable type of body conformation, the slender, long-backed type which readily accommodates itself to incorrect statics and results in the hollow-backed type of individual. On the other hand, it must be admitted that increased pelvic inclination is found in individuals without swayback; in fact, some have flattened lumbar spine, the so-called "straight back". In such instances it would seem that we must be dealing with a congenital abnormality involving the pelvic girdle. With the normal sacral inclination, we have the lumbosacral joint at a mechanical disadvantage, as the fifth lumbar vertebra rests upon the top of the sacrum at an angle of 42.5°. If we now increase the sacral inclination until the plane of the lumbosacral joint is a right angle, or even an acute angle, as it is in some cases, it is obvious that the stability of the articular processes between the fifth lumbar vertebra and the sacrum will be greatly reduced and the major part of the support of the fifth lumbar vertebra will be thrown upon the ligaments; as these stretch a sliding forward of the fifth lumbar on the sacrum is possible and does occur. Such slipping forward of the fifth lumbar on the sacrum may be of moderate degree termed prespondylolisthesis, or may progress to a true spondylolisthesis. In either condition, it is evident that we have a weak articulation, which, if subjected to trauma, may luxate or slip on one or both sides and give rise to symptoms which will persist until the luxation or slipping is corrected. It is our conviction that increased sacral inclination acting in this way is a very important contributing factor in causing instability of the lumbosacral articulation. In 36 cases out of 84, this condition was found to be present, and was considered the causative factor, not only in predisposing the lumbosacral joint to injury, but in the persistence of symptoms.

Congenital abnormalities of the spine of a developmental character are not uncommon, and the most usual site for such abnormalities is in the lumbosacral region. George, in his valuable contribution on this subject, states that 35% of all spines x-rayed in his laboratory for any purpose showed congenital abnormalities in the lumbosacral region. Fully 50% of these abnormalities exist without symptoms. Any considerable variation from the normal in this region, however, must be taken into consideration as a contributing factor in causing potential weakness of the lumbosacral articulation. Of these congenital variations, we feel that abnormality in the articulations between the fifth lumbar and the sacrum and the first sacral segment are probably the most important, the others less so.

Abnormalities of the articular processes: It is extremely difficult indeed to demonstrate in a Roentgenogram abnormalities of these articular processes, it being frequently necessary to arrive at a conclusion regarding this condition by the appearance and position of the fifth lumbar vertebra. Goldthwaite, however, has demonstrated these variations and described two types of articular processes; one of these is the so-called crescentic articulation, the lateral portion extending backward almost at a right angle with the anterior transverse portion (Fig. 4). Such an articulation by its shape forms a very stable joint and one difficult to dislocate.

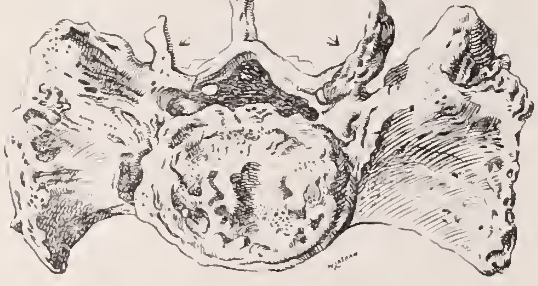


Figure 4—Cresentic articular processes on sacrum.

The other type consists of a flat articular surface with the axis nearly transverse (Fig. 5). It is obvious that such an articulation is much less stable than the preceding type, especially as there may be a decided forward inclination instead of the usual vertical position. We have seen this type of articulation at operation, and demonstrated the extreme mobility of the joint which results, so much so that it was quite evident that a slipping forward of the articulating processes on one or both sides could very readily occur.

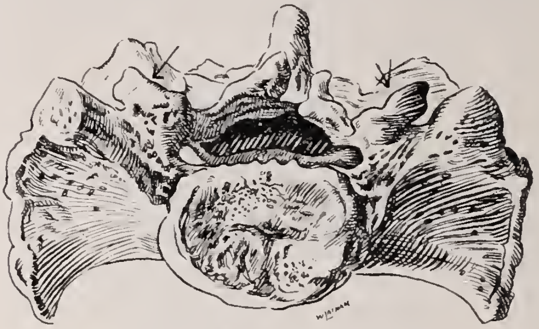


Figure 5—Flat articular processes on sacrum.

These two types may occur in the same individual, giving us a crescentic articulation on one side and a flat articulation on the other side, giving a weak joint on one side and a strong one on the other (Fig. 6).

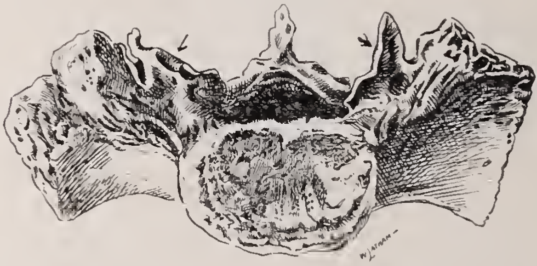


Figure 6—Flat articular process on one side, cresentic on the other.

That this variation in the shape of the articular processes of the fifth lumbar vertebra and sacrum plays a very important part in causing a potential weakness of the lumbosacral articulation seems evident from our series of cases. This condition was diagnosed as the most probable cause of trouble in 31 out of 84 cases. The diagnosis in these cases was based upon a very careful study of the x-rays and actual inspection of several of these articulations at operation. In 9 out of 24 cases operated upon, we were convinced that a more or less flat articulation was present.

Spina bifida occulta and lateral clefts: These conditions are due to the failure of the three or sometimes five centers of ossification of the vertebra to unite properly, resulting in incomplete closure of the neural ring (spina bifida occulta), or failure of the lateral masses to unite so that the vertebra remains separated into two or more distinct parts connected by fibrous tissue only. Sir William Turner, in his report on the human skeleton in the *Challenger,* states that this type of abnormality exists in 5% of all subjects examined. Spina bifida is easily shown by x-ray; the clefts would not show except under very favorable conditions.

It is quite evident that given a fifth lumbar vertebra with such deficiencies, we must expect a structural weakness which would allow of considerable abnormal mobility between the various segments of which it is composed.

Of the spina bifida occulta, we are inclined to ascribe considerable importance to that involving the first sacral segment. It has been our experience at operation that with such a deficiency, in the first sacral segment, a very surprising amount of instability at the lumbosacral articulation is found, in fact, the joint is so freely movable in these cases that it seems certain that any considerable trauma at this joint must result in a very marked disturbance as the joint is evidently incapable of resisting much strain. This condition was found in 22 out of 784 cases.

Enlarged and impinging transverse and spinous processes: The other common abnormalities, such as enlarged and impinging transverse processes and sacralized fifth lumbar vertebrae, are probably important in some cases. We are inclined, however, to consider them as only occasionally responsible rather than frequently so, and feel that they are much less important than the defective articulation and spina bifida occulta of the fifth lumbar and first sacral segment, as a contributing factor to instability of lumbosacral articulation. These four types of abnormality of the lumbosacral region are, so far as our experience goes, those most frequently present in patients giving a history of persistent low back symptoms following injury.

We have in the lumbosacral articulation a joint which is subject to great stress under ordinary conditions of life, while as the result of occupation or injury this stress may be tremendously increased. An articulation which is normal in structure should be capable of withstanding such increased stress without suffering more than temporary damage to its supporting structures, muscles and ligaments. We have, however, in apparently 35% of all individuals abnormalities and deficiencies in the lumbosacral region which seem to have a very definite tendency to decrease the stability of this articulation and so render it more liable to injury and displacement when subjected to undue stress by reason of trauma incurred. In estimating the severity of an injury to the lumbosacral region, such structural weaknesses must be taken into consideration, as they unquestionably have a direct bearing upon the course and final outcome of the condition. In only 6 of our 801 cases was a normal spine found.

A definite routine in the examination of any back case is essential so that nothing will be overlooked.

The history is important. By history, I mean not only that of injury, but the preceding history as well. In taking the history of the accident, the following points are important: Whether the injury was direct or indirect, the spine flexed or flexed and twisted, the injury by blow, fall or lifting strain, and the position of the patient at the time of injury. All these points help in determining the localization of the injury. A careful inquiry into occurrence of previous back trouble is important as a history of one or more previous attacks of low back disability points toward the existence of a definite decreased stability in the lumbosacral or sacroiliac articulations.

In making an examination it is needless to say that all cases should be stripped, for unless this is done many important points may be missed.

Inspection of cases complaining of low back symptoms usually reveals one of two postural defects: There may be either a definite list of the trunk to one side (Fig. 7), or a definite lordosis or hollowback (Fig. 8). The side listing is usually away from the side complained of, and accompanied by a tilting of the pelvis and a so-called sciatic scoliosis and spasm of the spinal muscles on that side. Side listing is taken to indicate an involvement or slip of the lumbosacral articulation on one side only.

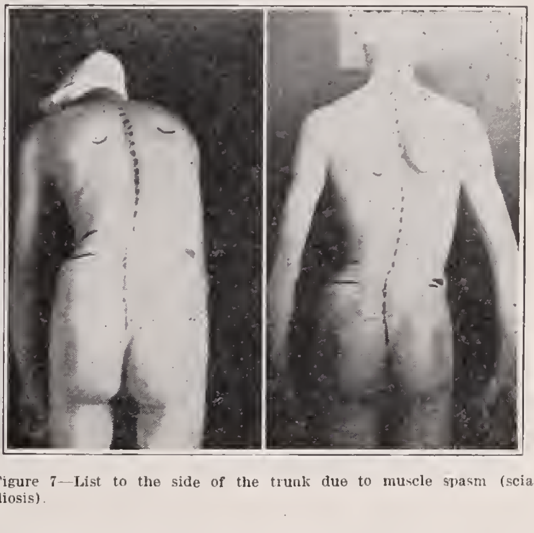


Figure 7—List to the side of the trunk due to muscle spasm (sciatic scoliosis).

Following inspection an examination should be carefully made concerning the following points:

(1). Pain. The localization of pain in back injuries is the most enlightening symptom, and a brief examination of the causes of pain in injury of the lumbosacral articulation is worth while.

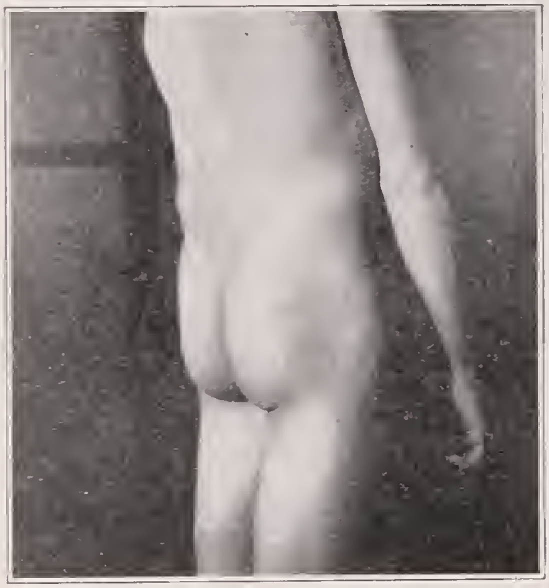


Figure 8—Flat back in the case of true spondylolisthesis.

Pain is usually due to three causes: Strain on the ligament and periarticular structures; muscle spasm due to partial or complete separation of the lumbosacral articulation; and pressure on the fourth and fifth lumbar and first sacral nerves. The first two causes need no explanation. It is obvious that partial or complete separation of the lumbosacral articulation must result in trauma and strain on these structures similar in character to that which accompanies sprain and strain of any joint. Pressure on the fourth and fifth lumbar nerves is due, so far as can be determined, to narrowing of the intervertebral canals through which these nerves pass. Such narrowing may be caused in two ways—by swelling and edema, the result of inflammatory reaction, and by a change in the relations between the fourth and fifth lumbar vertebra, and the fifth lumbar vertebra and the sacrum, bringing about an actual decrease in the caliber of the canal. As the canals are just large enough to permit the passage of the spinal nerve under normal conditions, it is evident that a slight decrease in diameter will result in pressure on these nerves and pain referred over their distribution.

Pain in injuries of the lumbosacral articulation, then, is complained of at the lumbosacral junction, which is above and internal to the sacroiliac joint, frequently up the back as high as the ribs due to muscle spasm and along the distribution of the fourth and fifth lumbar nerves. As these nerves form, with the first and second sacral, the lumbosacral cord, the pain will be referred along the sciatic nerve into the thigh, the lateral and posterior aspect of the leg and the dorsum of the foot. I might add the pain referred chiefly into the buttocks and region of the greater trochanter is more characteristic of sacroiliac involvement.

(2). Points of tenderness. The chief points of tenderness are over the lumbosacral articulation or to one side over the transverse processes over the posterior iliac crests at the attachment of the iliolumbar ligament, and along the sciatic nerve. There is frequently a tenderness over the sacroiliac joint of one or both sides due to an involvement of this joint in the injury or secondary to the long continued lumbosacral condition.

(3). Muscle Spasm. In cases of spondylolisthesis or prespondylolisthesis type, the muscle spasm is bilateral, the spinal muscles standing out prominently often as high up as the lower margin of the scapula. In the unilateral type the muscle spasm involves only the spinal muscles on one side, the affected side, which stand out in contrast with those of the opposite side.

(4). Spinal movements. Our experience is that the spinal movements are limited in all directions. Forward bending is limited and painful, particularly if the test is made in the sitting position so that all the movement must take place in the lumbar spine. Lateral bending is limited usually toward both sides, but usually more so toward the involved side. Extension or hyperextension of the spine is limited and usually quite painful.

In conjunction with the testing of the spinal movements, an examination into the limitation of straight leg raising is very important. With the patient on his or her back, and the hand under the lumbar spine, to note when it moves, the leg is raised with the knee extended. In injury to the lumbosacral articulation there is always a marked limitation of this movement, usually on both sides, but always more on the affected side (Fig. 9). As soon as strain is brought on the lumbosacral articulation, pain is complained of, due, of course, to strain of movement on the irritated joint.

These four points constitute the important symptoms to be investigated in determining injury of the lumbosacral articulation. If the findings on these points are postive and an x-ray examination reveals one of the several abnormalities to be met with in this region, we may confidently make a diagnosis of injury to the lumbosacral joint in acute cases. If, however, the case is of long standing and gives a history of months, and at times even years, of back symptoms and incapacity, we are even more justified in our diagnosis.

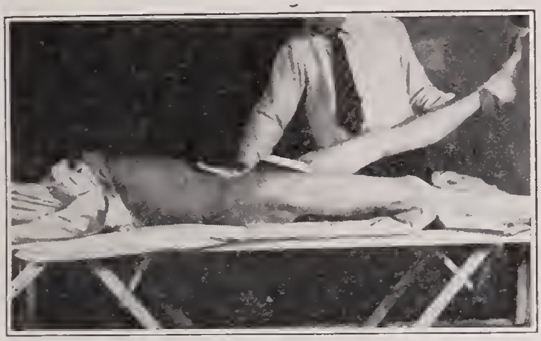


Figure 9—Showing the limitation of straight leg raising found with lumbosacral pathology.

The chief point in differential diagnosis is to distinguish between injury to the lumbosacral joint and that of the sacroiliac joint. I am willing to admit that this differentiation is extremely difficult in many cases due to the great similarity in symptoms of these two very different conditions. It does not, however, seem advisable to enter into a discussion of this differential diagnosis in this presentation because of its complexities. Those of you who are interested will find it covered in several exhaustive articles by Smith-Peterson. This much may be said: The sacroiliac joint is by comparison with the lumbosacral articulation a very strong joint, being but slightly movable and well supplied by ligaments. It is then much less vulnerable than the lumbosacral joint. Therefore, while admittedly injuries to the low back may involve the sacroiliac joint and cause back symptoms, it is our opinion that as a rule injuries to this joint do not play nearly as important a role in the production of long continued and permanent disability as do injuries to the lumbosacral articulation.

A correct diagnosis in back injuries is essential to successful treatment, the cutting down of the period of disability and restoration to normal or as near the normal as can be attained. On the other hand, failure to size up the situation correctly and consequent long disability period, with its discouragement and loss of faith in ultimate cure, makes the low back problem a very difficult one. The making of a correct diagnosis is not always easy but a careful history, a painstaking examination with a proper understanding of symptomatology and finally good x-ray plates taken in the anterior, posterior and lateral planes, interpreted with an understanding of the possibility of abnormalities involving this region, should enable one to make a fairly accurate diagnosis, give a prognosis based on pathology, and lead to the institution of proper and result-producing treatment.

TREATMENT

In considering the treatment of cases of lumbosacral injuries, it should be clearly borne in mind that such injuries involve two types of spine—the normal spine and the abnormal spine. It is our opinion that a very different attitude must be taken as regards both prognosis and treatment when dealing with a normal spine and an abnormal one. Injuries to normal spines form the bulk of the spinal injuries both in industry and in ordinary civil life. In injuries to normal spines the tears of ligaments, aponeurotic and muscular structures should, under adequate treatment, follow a normal course to recovery, just as a sprain or strain or dislocation of any normal joint does, with this difference: That such back injuries will be slow in recovery because of the greater difficulty in giving them adequate fixation. In injuries to the abnormal spine we cannot in the majority of cases expect such a normal convalescence. We are dealing with a potentially weak structure which is capable of functioning under ordinary conditions quite satisfactorily; when, however, such a structure has been injured, it will rarely return to anything like its former condition, and frequently the result is a more or less incapacitated individual, incapable of returning to work which requires much physical exertion. It seems to me that this difference must be clearly distinguished and kept in mind in outlining a plan of treatment for injuries to the lumbosacral region.

Let us first consider the treatment of an acute case, be it in a normal or potentially weak spine. Remembering that an injury in this region has possibilities of being a very disabling one, the patient should be put to bed, properly strapped and an x-ray taken in the anterior posterior and lateral planes. A careful examination should then be made, taking into consideration the x-ray findings and the seriousness of the injury estimated. If the spine is a normal one, adequate fixation by strapping, brace or plaster cast should be given and maintained for a period of time commensurate with the severity of the symptoms. As soon as the acute symptoms disappear, physiotherapy in the form of massage, hot and cold baths and therapeutic light, and finally exercises should be used to bring about as rapid a return to normal as is possible. Our experience has been that adequate fixation from the first often saves a great deal of time in convalescence. Also too early attempts at resumption of function are to be avoided; back injuries even in normal spines require a longer period for recovery than most joints and cannot be hurried.

Our experience, however, with spines showing one or more of the features which we have mentioned as factors in causing the lumbosacral region to be structurally weak; i. e., increased sacral inclination with spondylolisthesis, defective articular processes, spina bifida occulta has been quite diferent. We find that such cases do not progress along a normal course to recovery; on the contrary, it is difficult or impossible to get such backs comfortable, or if relief is secured, within a varying period of time, there is a recurrence of the symptoms. In other words, a period of partial or complete incapacity is entered upon, the overcoming of which taxes one's ingenuity to the utmost. As the result of a very discouraging experience with these cases, we feel that operation offers the only relief that gives promise of remaining permanent. If we have a fifth lumbar vertebra which is structurally weak by reason of increased sacral inclination with spondylolisthesis or one of the congenital abnormalities, and so incapable of properly functioning, its elimination as a movable vertebra by converting it into a fixed sacral vertebra through artificial ankylosis is a logical procedure. By doing this, we eliminate the weak and symptom-producing lumbosacral articulation and throw the burden of its work upon the articulation between the fourth and fifth lumbar vertebrae, which is rarely weak and so capable of assuming quite readily the function of the eliminated joint.

I do not wish to suggest operation as the method of choice in early cases, nor can I see any good to be accomplished by it in a normal spine. I do maintain most emphatically, however, that in the abnormal spine which does not respond to well-planned, conservative treatment within a reasonable length of time, or which readily relapses after apparent recovery, operative treatment is not only indicated, but offers the only promising means of securing a result. Furthermore, once the indications for operation are demonstrated, it is our feeling that procrastination gains nothing, but on the contrary does distinct harm, in that the longer the period of disability and incapacity, the more difficult is the return to normal and the greater the danger of an unfavorable psychic element entering into our problem.

We have in our clinic carried out this operative treatment in 24 cases in which sufficient time has elapsed to justify conclusions. In 23 of the cases operated upon, fusion of the fifth lumbar vertebra to the sacrum was done; in 4 cases fusion of the sacroiliac joint on one side was also done, as the symptoms were such in these cases as to indicate involvement of both articulations. In one case an enlarged and partially sacralized fifth lumbar transverse process was removed. In but one of these cases has there been any return of symptoms, and that was complicated by a long standing scoliosis persistence of pain of a distinctly different character than that experienced before operation (Fig. 10).

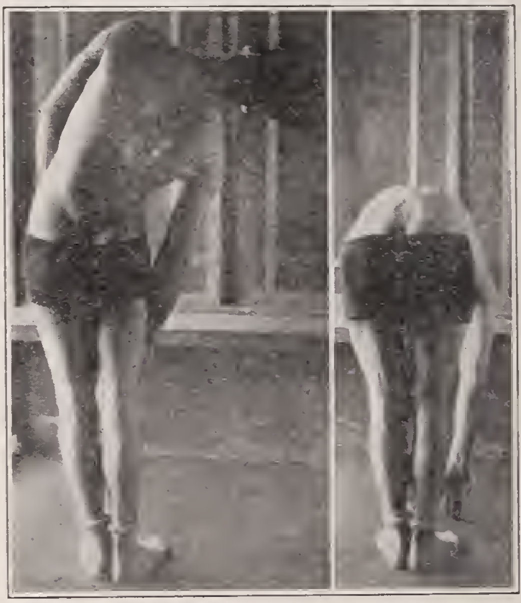


Figure 10—Showing the range of motion present in a case of lumbosacral injury six months after a stabilizing operation had been done.

While realizing that this is not a large number of cases, still our experience, taken in conjunction with similar results obtained by others, make us feel that this method has proven its usefulness and deserves to be accorded a very definite place in the treatment of injuries of the lumbosacral articulation in which symptoms have persisted in spite of proper conservative treatment.

CONCLUSIONS

1. Injuries to the lumbosacral articulation are of relatively frequent occurrence as the result of injuries to the back due to occupation or accident.

2. The lumbosacral region is frequently the site of abnormalities and congenital deformities which decrease the stability of the lumbosacral articulation, making it a potentially weak point and rendering it less resistant to injury.

3. In a normal spine injuries of the lumbo-

sacral articulation recover as a rule with adequate fixation and physiotherapy.

4. In a spine in which, by reason of some abnormality, we have an insufficient lumbosacral articulation, rarely does recovery take place and long-continued and even permanent disability frequently results.

5. Where a definite weakness of the lumbosacral articulation can be demonstrated in patients with a disability period lasting over several months, the elimination of the incompetent joint by ankylosing the fifth lumbar vertebra to the sacrum is a feasible procedure and one which offers the greatest expectation of relief.

DISCUSSION

NELSE F. OCKERBLAD, M. D., (Kansas City, Mo.): Dr. Dickson has called attention to spondylolisthesis. These lesions occasionally affect the nerves of the bladder. The first case I saw of that type was a little girl six years old. She had been brought to the physician for the relief of bed wetting. The child had no control over the bladder. When it got to a certain fullness, it overflowed. It was obvious there was a nerve involved. She could be cystoscoped without anesthesia. It was complete retention of urine due to interference with the nerve supply.

The next case was a man of sixty, who had a retension in urine of obscure origin. He had no prostatic obstruction to account for it. An x-ray picture taken laterally showed he had a prespondylolisthesis.

About the middle of September, a case came to my attention of a woman who had had for fifteen years difficulty in urination. She had a urethral caruncle removed on two occasions. She had difficulty in forcing any urine out of the bladder. We discovered she had a residual urine of 600 cc. and until her bladder was that full, she was unable to void. If you emptied it, she could not void until that reservoir was filled up. A lateral plate taken of her spine showed she had a spondylolisthesis, and a history of an injury going back fifteen years.

These injuries not only have a bearing on industrial cases, but occasionally involve nerves of the bladder and become important to the field of urology.

ROBERT SCHROCK, M. D., (Omaha, Nebr.): In the handling of traumatic low backs, there are two hazards which are put onto us. First, the measure of our ability to return this traumatized back to its normal, or nearly normal. The smallest amount of remaining partial debility which results is a measure of inefficiency. The industrial hazards are in dollars and cents from the standpoint of the people responsible for these injured individuals.

The later the diagnosis is made, the later the institution of treatment, the more expensive it is, not only to the people responsible financially, but to the individual himself. It is the attitude of too many adjusters that these people do not want to get well. They become to the adjuster sources of terrific trouble. I do not believe more than one out of one hundred is not perfectly willing and eager to get rid of that low back pain.

We should not allow early return to work before they have gone through a period of redevelopment of those muscular structures which will permit added strain. The difficulty of adapting the job to the man is almost insurmountable.

It is perfectly practical. If we who do not have backs, from a traumatic standpoint, but with trouble in our muscles, were to start tomorrow on a ditch-digging job, our musculature would not hold us up. These men return to work without that period of redevelopment, and can not be expected to do heavy work. They must go through a period of light work as a preliminary to return to their normal occupation.

DR. DICKSON, (closing): I am glad the Doctor called attention to our bladder symptoms. We did not have time to go into all of them. It has an important bearing on your complications in these cases. It is one phase we are going over carefully now. Last week I had a physician troubled with retention. He is worried about himself because he thinks he will get a pyelitis. He is willing to do anything to eliminate it. It is an important general result which may come about as a result of disturbed relations at this point. As Dr. Schrock said, the low back is the bane of the industrial world today.

MANAGEMENT OF SURGICAL DISEASES OF THE THORAX*

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Surgery of the thorax has not yet attained to the advanced state of progress that has been achieved in surgery of other major cavities, particularly the abdomen and pelvis. This dearth of exact and accepted knowledge in this branch of surgery is well demonstrated by the comparatively meager space alloted to it in fairly recent texts and systems on surgery. Of standard systems one three-volume set contained just thirty-five pages on the thoracic cavity and lungs excluding the heart. An English five volume work had thirty-seven pages devoted to the thorax. Keen's System with its latest volumes has fifty pages much of which describes more or less obsolete positive and negative pressure cabinets which are chiefly valuable now, historically. The most comprehensive recent literature that has been put in text form is found in "Surgical Diagnosis and Treatment by American authors edited by A. J. Ochsner, where one hundred and thirty pages are given to thoracic surgery with a large share assigned to surgery of pulmonary tuberculosis. The explanation of the slower progress in this field lies in the intense fear, and we now believe unwarranted fear, of opening the thoracic cavity. The surgeons of the ninties and earlier who were daring in their approach to other major cavities were filled with timidity about opening the thorax. The collapse of the lung and occurrence of pheumothorax was viewed with alarm as an irretrievable and necessarily fatal misfortune. In justification of this apprehension at that period of progress in thoracic surgery it may be said that there had been observed the occurrence of unexplained fatal shock following opening of a previously intact pleura. Recent authors have stated that a reflex closure of the glottis may occur as a result of incising a pleura without deep narcosis. Experimentally the production of a large thoracotomy with a resultant complete collapse of one lung seemed to reduce the tidal air in the opposite lung to a fatal degree.

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*This is the first of a series of articles on Surgical Diseases of the Thorax to appear in the Journal.

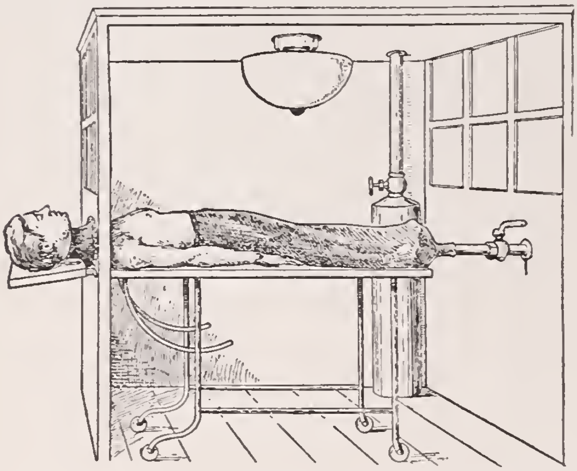


FIG. A
Sauerbruch negative pressure cabinet, now obsolete in thoracic surgery, but historically of great importance in the study of mechanics of respiration.

The early outstanding mile-stones of progress came in the period from 1895 to 1905 and was largely the contributions of American surgeons. The next epoch during which pressure cabinets were the vogue received its impetus largely from German surgeons, particularly Freidrich, Sauerbruch and Brauer. In 1910 Meltzer and Auer, elaborating and extending the work of Fell, Matus and Blum, and O'Dwyer, developed the insufflation anaesthesia which has supplanted unwieldy cabinets when pressure variation needs to be compensated for. To more clearly credit the pioneers in this adventurous activity the following chronological outline is given:

1895: Bazy occluded thoracotomy wound with exploring finger to prevent extensive collapse.

1896: Tuffier and Hallion determined difference in pressure of 6 mm. of mercury within and without the lung.

1893: Fell demonstrated a bellows controlled pulmotor. O'Dwyer modified it by attaching a laryngeal tube. Blum used the apparatus to resusicitate in asphyxia neonatorum. Matus substituted a pump for the bellows.

1897: Milton used the apparatus in one operation.

1898: Matus and Parham further developed the subject.

1899: Kuhn advised a laryngeal insufflation tube.

1904 to 1908: Friedrich, Sauerbruch, Brauer, numerous contributions on pressure cabinets.

1910: Meltzer and Auer intratracheal insufflation anaesthesia.

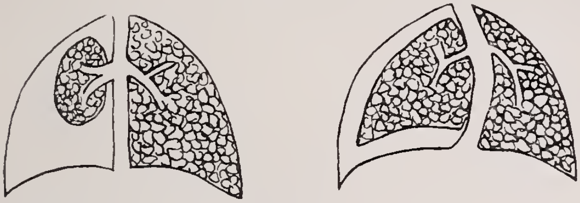
The gross result of this series of experiments and the clinical experience of the following years up to the period of the World War was to advance the knowledge of the principles of physics and physio-pathologic phenomana of the chest, to allay the fears of thoracotomy and greatly increased the temerity and confidence with which thoracic surgery was approached. The cumbersome and unwieldy pressure cabinets are almost universally discarded. Opening the thorax has come to be considered a less formidable and dangerous procedure than was formerly supposed and the great majority of cases can be dealt with under open anaesthesia without great risk. Sauerbruch whose name is most intimately associated with the development of pressure cabinets has used them but rarely in later years and may now have discarded them altogether. In the exceptional case requiring general anaesthesia and where bilateral disturbance of pressure is unavoidable insufflation anaesthesia by the method of Meltzer and Auer is a more simplified and efficient means of maintaining gaseous interchange between the lung and the external atmosphere.

For the period during and following the World War through the opportunities afforded to study chest injuries and because of the numerous cases of empyema and lung abscess complicating the contemporary influenza epidemic, a further epoch may be designated in the progress of thoracic surgery which has to do especially with a better understanding of the physics involved and with the management of empyema. The work of the Empyema Commission established significant principles of management based on a better knowledge of the mechanism of respiration.

Former conceptions of the mechanics of the thorax were erroneous mainly because the mediastinum was considered a rigid partition dividing the two thoracic cavities into entirely independent spaces each unaffected by pressure alterations in the other. It was believed that an open pneumothorax in one side caused the opposite lung to carry on the whole of the respiratory function and that no expansion or contraction of lung occurred on the side of the opening. Emerson, Sauerbruch and Mayer held this opinion. Garres, writing in 1911, stated that the pressure in the thoracic cavity was atmospheric pressure on the side of the thoracotomy and the normal 7 mm. of mercury negative pressure on the opposite side. Powers, in 1922, Ochsner's Surgery, makes the same observation.

It is now an established fact that the normal mediastinum is not a rigid partition, but is mobile to a marked extent. This mobility is such that for practical purposes the thorax may be regarded as one cavity.

Experimentation shows that the thorax of the dog and of the human behave in identical manner. Dog experiments prove that one thoracic cavity does not function independently of mechanical factors in the other. If a thoracotomy is done on one side both lungs collapse equally. Collapse is not complete on the operated side. The density and air containing values are the same on the two sides. Opening both thoracic cavities may be not necessarily fatal.



Schematic, illustrating changed status of understanding of thoracic mechanics in open pneumothorax.

FIG. 1
Redrawn from Moschowitz illustration showing rigid mediastinum. Complete collapse of one lung and normal expansion of the other.

FIG. 2
Illustrating mechanics of open pneumothorax correctly showing mobile mediastinum and approximately equal collapse in each lung.

Further experiments indicate that there is a direct ratio between the size of the opening and the danger of death dependent on the vital capacity of the lungs. The normal average vital capacity is 3700 cc. A patient with this vital capacity measured by an accurate spirometer can withstand an opening of eight square inches. If the vital capacity is one-half of the normal the size of the opening must not exceed 4 square inches to avoid overstepping the limits of safety. It is immaterial whether the opening is unilateral or bilateral providing the combined area of opening does not exceed the limits of safety based on the vital capacity. Naturally, since the tidal air represents the amount of interchange of atmosphere essential to life if the vital capacity is equal to the tidal air (300 to 500 cc) no opening can be tolerated. Life can be maintained as long as the vital capacity is not reduced below the 300 to 500 cc and, of course, under normal conditions the reduction in vital capacity is great before tidal air is encroached upon. In empyema and in pneumonia there is marked reduction in vital capacity, and when empyema has supervened on a pneumonia which is still active as so commonly occurred when empyema complicated influenzal pneumonia even the tidal air is difficult to obtain. To add to this the further reduction of vital capacity that accompanies open pneumothrax may be fatal.

With this better understanding of the mechanics of the thorax Sauerbruch has contributed important factors dealing with the heart and circulation. Normal respiration exerts an aspirating effect on the right heart. When the lung is compressed or collapsed or filled with inflammatory exudate the work of the right heart is increased. Aspiration of the heart fails and venous stasis results as evidenced by increased venous pressure in the general circulation. The blood pressure, therefore, has become along with the spirometer a measure of the ability of the patient to withstand thoracic surgery. Sauerbruch will not operate a patient with low blood pressure until preoperative management with cardiac stimulants has brought it up to a safe level. High blood pressure he considers no contraindication.

Loss of heat from thoracotomy wounds has been found to be of importance. Rabbits may lose 3.5° C. in five minutes. Thoracotomy in dogs is attended by greater heat loss than occurs in laparatomy with extensive eventration. Guarding against undue loss of body heat during thoracic surgery is a real contribution to the safety of the patient.

The mechanical principles effecting thoracic surgery must not be left without referring to the marked alterations resulting from chronic disease. As a result of fibrosis and induration from tuberculosis or because of peribronchial adenitis and periadenitis the mediastinum may actually become or at least approximate a rigid partition. It or the diaphram or both may be immobilized in part by disease. The mediastinum may migrate as the result of cavitation and collapse of one lung toward the side of the shriveled lung. It thus becomes evident that the mechanical problems in one case may be quite at variance from that of another. The general principle, however, of mobile mediastinum and equality of pulmonary collapse in the two lungs must be recognized. The effect of lesions such as cavitations, infiltrations and consolidations and compressions must be judged from their extent and localization.

Under the leadership of Sauerbruch Central European surgeons have inaugurated a new era in the management of pulmonary tuberculosis. As surgical adjuncts to medical management of tuberculosis restricting activity in the most involved lung by operative procedures several methods have been adopted with great success. Sectioning of the phrenic nerve to paralyze the diaphragm on one side, cutting the spinal accessory nerve to reduce activity of muscles of the chest wall, localized compression by rib resection, extra pleural collapse by parrafin plumb compression and complete thoracoplasty have an established place in the management of tuberculosis with extensive involvement.

It may be said that we have passed safely through the period of fear and apprehension in attacking thoracic lesions surgically, that we no longer feel the need of extensive pressure cabinets, that our understanding of the mechanics of the chest seems to be better clarified and that although much remains to be established from the standpoint of physiopathology we have accepted as definitely proven certain guiding principles that point the way of exactness and precision, and that clinically much more than ever is being accomplished in this department of surgery with results that are encouraging to further progress.

PRACTICAL SURGERY—(Continued)

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THE INCREASED MORTALITY IN IMPORTANT SURGICAL DISEASES, ESPECIALLY IN ABDOMINAL SURGERY

To too many surgeons of the last few years' production the suggestion that their mortality rate in abdominal surgery or any other kind of surgery is higher than that of surgeons doing the same class of work ten to twenty years ago, would seem almost to be an insult to their intelligence, but if we are to accept the findings of the Bureau of Vital Statistics there are grounds for this belief. A paper upon this subject by A. Murat Willis* strongly substantiates the above. It appears from the Bureau of Vital Statistics that the death rate from hernia, intestinal obstruction, surgical diseases of the kidney, and pelvic inflammations, has materially declined since 1905. In some other important surgical conditions the death rate has steadily mounted: For instance, from 1901-1905, the death rate from gallstones per 100,000, was 2.2; in succeeding years it rose steadily, showing an increase of 77%. In the same period the mortality rate from gastro-intestinal ulcer increased 72%; from appendicitis, 31%. Thyroid diseases showed the terrible increase of 250%. In certain well-known clinics where cases are thoroughly studied, classified, given the benefits of the advances in the science of medicine due to increased perfected diagnostic and technical skill, the mortality rate is steadily declining. Doctor Willis emphasizes an undeniable truth that it is the fashion of the day to minimize the dangers of operative procedures in most kinds of pathology within the abdomen—the gall bladder and appendix are said to be superfluous, useless parts of one's anatomy, and should be removed if there is a suspicion that discomforts may be, by any reasoning, attributed to them. With ulcer of the stomach and duodenum, extremely radical measures are advocated by some leaders because they themselves, exceptionally skillful, are able to carry them out.

APPENDICITIS

By those who are informed,* it is reasonably estimated that in Canada and the United States there are about 500,000 cases of appendicitis a year, and of these 5%, or 25,000 die. This death rate equals "the combined death rate from ectopic pregnancy, pyosalpinx, gallstones, pancreas, spleen and the thyroid. It nearly equals the mortality rate from gastric and duodenal ulcer, intestinal obstruction, and gallstones".

Having grown up professionally with the development of the recognition of, and treatment of appendicitis, and having done the earliest operation here (1888), and several thousand cases since, the last one today, I feel that I am in a position to express an opinion upon the subject, and can perhaps recognize the *why* and *wherefore* of the increased mortality rate of today over that of ten or more years ago.

The reason will be found in the cock-sureness of the modern product of the surgical art. To comprehend the situation, let us go back a little: Deaver, today, is recognized as probably the most experienced, and as safe a surgeon in the medical and surgical ttreatment of appendicitis, as any man in this country or abroad. Quoting from his first book, A Treatise on Appendicitis—1896, he says, after strongly advocating early removal of the appendix when practicable, "I believe that laxatives should be administered in the beginning of every attack of appendicitis." In most cases castor oil should be administered." He also advocates saline cathartics, calomel in small and repeated doses failing to relieve stomach irritability, calomel in 5 gr. to 20 gr. doses repeated in an hour, may be given. Today, this most experienced and brilliant surgeon strongly urges against the employment of any kind of laxative.

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*Surgery, Gynecology & Obstetrics, March, 1926.

*Le Grand Guerry, Transactions Am. Surg. Assn., 1926.

It was the general practice of most physicians to prescribe laxatives in the treatment of appendicitis, particularly in the earlier periods of the attack. I never did so.

Liberal opportunities for observation, and attendance upon many medical gatherings in different parts of the United States, convinces me that, as my friend Dr. Donald Macrae, an exceptionally practical general surgeon and skillful operator, says, "It is felt that the medical profession generally is more negligent and careless now in the early treatment of acute appendicitis, than it was twenty years ago, for then the procedure was discussed more". It might be instructive to the younger members of the profession, to learn how the principles of the present day treatment of appendicitis as carried out by the safest practitioners, were developed. It required a hard fight, and the wiping away of jealousies after many acrimonious debates. As an example: At the Saratoga meeting of the American Medical Association, in June, 1902, Doctor Deaver of Philadelphia, reported a series of 416 cases of appendicitis, 275 acute and 141 chronic, Deaver advocating prompt operation on all acute cases not moribund. Doctor Ochsner of Chicago, came back at him with a report of a like series of 416 cases of appendicitis, of which 263 were acute and 153 chronic, a marked similarity of kinds of cases, and for comparison as to results fairly alike. Deaver's mortality was 13-plus per cent in acute cases, while Ochsner's was less than 4 per cent. In the chronic cases of each the mortality was practically *nil*. The character of the acute cases was the same, for, as Ochsner well says, when formerly he treated his acute cases as did Deaver his 275 acute cases, his mortality was higher than Deaver's, whereas, now he pursues another plan, his mortality is ten per cent lower than Deaver's. Dr. W. J. Mayo, by following the Ochsner plan, reduced the mortality at the Mayo Clinic at that time, from 15 per cent to 3 or 4 per cent. Ochsner said, "In observing my cases I found that the mortality was almost entirely confined to the class of cases which were operated on after the first thirty-six hours from the beginning of the attack. The cases operated on after forty-eight hours gave some mortality, and those after 72 hours gave still larger mortality, while those that came after 96 hours a very large mortality. From that time on, the mortality began to decrease. It seems clear that if we could operate on the cases which come to us in the interval, and on those which come to us in the first 36 hours, we could practically save them all, and if we could transform most of the other cases into interval cases we would insure a much smaller mortality."

At the next meeting of the American Medical Association, in New Orleans, 1903, Ochsner again explained in a very clear way, his position, and there was little disagreement with him, but at the Atlantic City meeting, 1904, a most undignified and before unheard-of discussion took place. Deaver claimed that his mortality in acute cases since the preceding January (1904) was less than 6 per cent. Previously the Drs. Price of Philadelphia had harangued: One, Dr. Joseph Price, having stated that in his last 400 acute cases he had lost only two patients. Price operated promptly on all cases of appendicitis, whatever the stage.

Another gentleman from Philadilphia also attracted attention. A text-book writer from New York City indulged in epigrams (which, by the way, are never arguments). Two of the gentlemen who had read excellent papers refused to close because of the trend of the discussion.

Several of my friends visited Philadelphia a few days afterwards and saw cases operated upon which had been held until a more proper time for operation, and others denied operation until they were in a safer condition. The improvement in results from a 13-plus per cent mortality to less than 6 per cent was easily accounted for.

One of my purposes in calling attention to the absolutely scandalous discussion upon appendicitis at the Atlantic City meeting, is to show the jealousies and bitter feeling which existed between the supporters of an unbalanced advocacy of operating on all acute cases of appendicitis, and those who thought as did Doctor Ochsner. It was in reality the East against the West and the Chairman of the Surgical Section was perfectly overwhelmed by the conduct of some of the disputants. He was entirely unable to control the section. Personalities were indulged in which would not have been tolerated for one moment in any of our Western societies. One of the well-known surgeons of Philadelphia did not hesitate to say that as he did not believe the statistics of other men, he did not expect others to believe his. Claims were made by the Philadelphia men that they literally operated upon every case as soon as presented and diagnosticated, and yet reliable Western men were paralyzed on going into a Philadelphia hospital in which one surgeon who made that statement on the floor of the A. M. A., was operating, to see patients actually presented and operated upon for appendicitis, with the statement that they had been held awaiting a favorable period for operation. They did not practice what they preached, nor did their statements of facts harmonize with their actual conduct. The bombastic conduct of some of the Philadelphia men and one New York man, was so violent and unconventional that, as I said above, two men who had read papers flately declined to close their discussion. No such improprieties have ever been seen in any Western society, and were discreditable to the members involved. Of course, for the sake of decency, the editor of the Journal of the American Medical Association did not publish the discussion as it took place.

Now, if the Ochsner treatment were only relative to the time to operate there would not be very much to it; however, this is not the case. He insisted most positively that under no circumstances should laxatives or cathartics be given during the active stage of the inflammation of the appendix, neither should enemas be employed. No food should be given by stomach,—what nourishment was administered should be given by enema. If there were vomiting the stomach tube should be used. Only enough morphine should be given to render the patient comfortable. Thirst should be quenched by rinsing the mouth with cold water and by the use of small enemata,—later, small sips of very hot water frequently repeated, may be allowed. Following also a suggestion of Murphy, Ochsner recommends the use of continuous normal salt solution by rectum, the "Murphy drip" method. About the same time that Deaver and Ochsner were having their debates, Dr. J. B. Murphy of Chicago published a notable paper in the American Journal of the Medical Sciences, July, 1904, reporting one thousand cases of appendicitis, in which he showed how, by employing a better operative technic, the mortality of acute cases after forty-eight to ninety-six hours, can be materially reduced. I am inclined to believe from many experiences, when circumstances compel me to operate during these acute periods, that a material advantage in technic renders such cases more safely operable and reduces the mortality equal to, and in some types of cases, below that of the Ochsner plan, especially when his plan has not been instituted from the beginning of the attack.

I believe that, having been denied the opportunity of an early operation, if the disease appears progressive and one is convinced of the presence of pus, longer waiting may be more dangerous than action. A technic which I employ, and which is practically the same as that described by Murphy in the article above referred to, certainly does lessen the mortality much below that which was formerly employed.

The time not to operate never can be decided by any rule such as some people think Ochsner formulated, but rather an individual judgment must apply in each case. Under favorable circumstances an immediate operation, within the hour of seizure, will give the best prognosis. There may be many exceptions to this which all physicians recognize, but I urge operation unless the condition of the patient and his surroundings demand delay. Do not operate when the inflammation appears localized after forty-eight hours, until you are convinced that pus is present. Every case which is not in process of resolution by the end of the fifth or beginning of the sixth day, requires operation. Later operations always increase the many dangers of complications, more or less life-threatening.

Above all, do not be carried away by the teachings of some men, but rather rely upon your own personal observations and the advice of those you know. There are many men in our own territory whose experience ranges from five hundred to several thousand operated cases of appendicitis. One of experience knows that the following of any man's rule in the operative treatment of appendicitis will lead to disaster. I would not follow Ochsner absolutely, because I have met disaster in so doing, yet less frequently has this happened than by any other special practice. My opinion based on an active hospital and private experience in appendicitis, of many years, is that a happy medium between the practices of Ochsner and Murphy is the best. Never follow the waiting methods of Ochsner too long. Do not begin the active methods of Murphy too early after 36 to 48 hours from the beginning of the attack. Do not operate after 48 hours from the beginning of the attack unless the symptoms point to a spread of the inflammation beyond the immediate location of the appendix when the patient has had the benefit of the "Ochsner treatment" from early in the attack: otherwise do not delay operation for an hour. Do not operate from the third to the fifth day if the patient is doing nicely and the symptoms are localized. Do not delay operation beyond the sixth day—or at the latest, 8th day—if you are not convinced resolution is taking place. Try to govern your actions by your conception of the pathology present, irrespective of the number of hours or days since the beginning of the attack, remembering always that the safe time to operate is when the inflammatory products are confined within the appendix.

Do not operate upon apparently moribund patients: they all die after operation and the operator by his act tends to bring surgery into disrepute.

A few words as to the technic of operation: The incision I usually employ is one through the outer margin of the rectus muscle. This incision allows of lengthening to admit of the carrying-out of any procedure that the pathology encountered may necessitate. In known, clean cases I have many times used the McBurney incision. I like also to open the rectus sheath, retract the muscle well towards the median line, and then open the peritoneum through the posterior rectus sheath. This, when the wound is closed, gives an excellent protection against danger of post-operative hernia. It is a miserable incision if drainage has to be employed. I coffer-dam with gauze strips the infected area away from the peritoneal cavity—always preferring to open the abdomen median to an adhesive area. The appendix is nearly always removed—the only exception being in instances where the doing-so would probably seriously damage the enveloping intestines. It is my practice to drain all acute, severely infected cases. If the infection is an extensive one and the incision has been fouled by the escaping pus, either, the incision should not be sutured at all, being simply drawn together by several towel hooks, or closed by silkworm gut through and through sutures. It is in many such instances unwise to close the peritoneum and fascia with catgut. A badly infected wound with sloughing of the fascia may follow layer closure of such wounds. When the wound has not been primarily sutured, it is taken care of later by secondary suture or adhesive plaster closure. I have closed many such wounds without resultant hernia. Being temporarily left open they are life-saving drainage exits.

Dr. Van Buren Knott, formerly of Sioux City, is the sanest man, and in my opinion the best operator I have seen, in the handling of all types of appendicitis. I have seen him operate many times. In a discussion of a paper of my own upon this subject, he said: "Cast-iron rules cannot be followed in appendicitis. Every surgeon should follow out his own methods. I believe in early operations. An attempt to classify cases of appendicitis by hours is impossible. A case of four hours' duration may be late, while one of ninety hours may be early. We have all found gangrene when the operation has been done very early. Any case is late in which the infection is periappendicular. Hours have nothing to do; pathology has all to do. In general sepsis I believe in temporizing; the mortality in these cases is necessarily high. Death in such cases, after operation, makes a terrible impetus against operation in general. One should enter the abdomen on the inner side of an adhesive area, not through it. I cannot admit that an operation for appendicitis is an easy one; some few may be. When perforation and gangrene are present the operation is one of the most difficult operations ever performed. I am opposed to the statement that they are ever easy. I think it is unwise to be guided by any rule of action. One must be guided by one's own experience and study."

The best results of any treatment of appendicitis done by one man during the past twenty-five years I know of, are those of Dr. Le Grand Guerry,* of Columbia, South Carolina. The series, an unselected one, was of 2959 cases, with sixteen deaths—a mortality of 0.54.

	No. Cases	No. Deaths	Mortality
Chronic appendicitis	1241	0	0
Acute appendicitis	688	1	0.15
Gangrenous, ruptured, localized abscess	570	4	0.7
Acute diffuse peritonitis	85	7	8.2
Cases in extremis; abscess drained, appendix not removed	9	3	33.33
Appendix removed in the course of other operations	366	1	0.27
	2959	16	0.54

The methods of treatment employed by Dr. Guerry were chiefly based upon those recommended by Ochsner. The operative technic was his own, based upon his knowledge of the work of others and his personal experience as a general surgeon, which is a wide one.

I have purposely not mentioned blood findings in discussing the subject of appendicitis. When the circumstances admit, I commonly have a study of the blood made—this is a routine in the University Hospital and in the other Hospitals where I work. It is of value only when the physician can evaluate it with all other clinical findings. It is a weakness to regard it seriously unless the physician knows appendicitis and has a real intimate acquaintance with its routine behavior and its vagaries.

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*Transactions American Surgical Association, 1926

I have called attention to the increased mortality in cases of appendicitis for the purpose of emphasizing the importance of the pathology—the seeming tendency to belittle it. From my experience as a teacher I have many proofs of the apparent indifference to the seriousness of the disease, in the minds of students, hospital internes, young surgeons, and some of their elders.

THE MEDICO-LEGAL ASPECT OF THE COMPENSATION ACT*

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As I view it, Workmen's Compensation legislation represents the effort of modern society to meet a situation resulting from the high degree of mechanization and extensive use of power, characteristic of modern industry. It is the outcome of a gradual evolution in public opinion with regard to the relation and responsibility of the community and the employer to the wage earner in matters of safety and health. Prior to the introduction of these Compensation Laws, rights and duties of master and servant were covered by the Common Law. Under the Common Law, a master was not in any wise liable to his servant unless the servant's injury was directly due to the employer's negligence. The master owed certain duties towards the servant with reference to furnishing a reasonably safe place to work, reasonably safe tools and so forth, but the duty of the master in the main, as to his servants, was no more than that which he owed to any stranger who might lawfully be upon his premises. At Common Law, the master had three defenses:

1. The assumption of risk. This means that the servant, in accepting employment, assumed the usual and ordinary risks incident to such employment.

2. The second defense was known as the fellow-servant defense, which was to the effect that the master was not liable for injuries caused by the acts of fellow-servants, if he had used ordinary care in the selection of his servants.

3. The contributory negligence defense by which the recovery of damages for injuries, which were caused in part by the employee's own negligence, might be denied.

Theoretically, this made it impossible for the servant to recover damages for injuries in the absence of a clear case of negligence on the part of his employer. The burden was on him to prove it.

Attempts were made in England, and later on in this country, to soften the hard and fast Common Law Rule, by passing what is known as Employers Liability Acts. These Acts, in the main, either abolished the defense or assumption of risk, or made it a question for a jury. These acts generally abolished the fellow-servant defense. They also made contributory negligence a question for the jury, provided that it should not be a bar, but that the recovery should be diminished on account of contributory negligence and in the main, provided that all questions of negligence and contributory negligence were for the jury.

I assume that it is a matter of common knowledge that the main effort of a personal injury lawyer, in trying a case for an injured plaintiff, either against his master or any one else, is to get to the jury. If the litigant and his counsel can get in enough evidence so that the Court will submit it to the jury, and if his client has sustained some injuries, the jury will generally take care of him. This effort to get to the jury resulted in an infinite amount of false swearing and perjury. There was also an uncertainty about it. One claimant would get a substantial verdict and the other one would not receive anything. It was necessary for the injured workman who wished to sue his master to employ an attorney. These cases were generally handled on a percentage basis, the percentage ranging from twenty-five percent to fifty percent. Such litigation was costly and long drawn out. Too frequently lawyers were guilty of sharp practice in swindling the injured employee out of a major portion of his recovery.

Certain other Acts were passed by the various legislatures in this country known as Factory Acts. These Acts provided for certain safety appliances, all to the end to lessen the hazard of employment. These Acts generally abolished the defense of assumption of risk and contributory negligence in cases resulting from a violation of these Factory Acts.

All of these Acts tended to modify the Common Law rule as between Master and Servant.

The passage of such legislation opened the way for the Compensation Acts. The great complexity of relationships in modern life brought with it the necessity of coping in a comprehensive and systematic way with problems which owed their existence to that very complexity. Public opinion came to regard the care and rehabilitation of injured workers as a just charge upon the industry in which the accident occurred and through that industry upon society.

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*Given before the annual banquet of the Omaha-Douglas County Medical Society, January 8, 1929.

The first of these Workmen's Compensation Laws was passed in Germany in 1884. They were later passed in England and from England spread to this country. Nearly all of our legislation on the subject has been since 1910. Up until 1926 all the states of the Union had such Acts with the exception of Arkansas, Florida, Mississippi, North Carolina and South America.

These Acts have become matters of concern to industry because of the ever-increasing cost laid upon industry. This increasing cost is, of course, due to the incessant liberalization of benefits, including medical attention. A conservative estimate, says a New York writer on the subject, would place the annual nationwide expenditure for such Acts in 1926 well over $200,000,000. In New York State alone, in 1925, the cost to employers, exclusive of self-insurers, was more than $50,000,000. Another cause of the dissatisfaction is the inequality of benefits provided under the various State laws. The manufacturer, for instance, in Nebraska, observes his competitor in Iowa paying lower rates because of differentials in benefit schedules, medical allowances, narrower judicial interpretation of the law and differences in administration. I do not know whether you remember it or not, but one legislature under Adam McMullen repealed the entire Nebraska Compensation Act and substituted the Iowa Act. This Iowa Act has limited medical expenses and has certain limitations as to the payment of compensation for total disability. This Bill was vetoed by Governor McMullen largely because of the fact that it provided for limited medical attention. The last Legislature passed an Act calling for the appointment of a Commission to make a study of our Compensation Act and to make suggestions for its improvement.

As I have said before, there has been a tendency to liberalize these Compensation Acts and to increase the benefits to the workmen. Speaking generally, these Acts in the beginning, allowed compensation only for injury resulting from accident arising out of and in the scope of the servant's employment. The Acts generally defined an injury by accident as one resulting in objective symptoms at the time of its happening. Originally, an injury by accident, resulted from an unexpected and fortuitous event, happening more or less suddenly and at a definite time and place, and this definition has been liberalized to require only that the injury be unexpected, fortuitous and so forth, that is, the injury is treated as the accident. It does not matter that the injury was not caused by an accident, but resulted from merely normal and customary activities. Under this liberalized rule industry has been made liable for deaths and disabilities from heart failure, hernia and other diseases due merely to going to work at a time when the employee ought to have stayed at home or gone to a hospital. In many states, by statutory enactment, the word "accident" has been left out of the Act and the Acts allow recovery for injury arising out of and in the scope of the employment. Originally, these Acts covered only injuries by accident, covering diseases only when resulting from accidents, to the exclusion of all diseases of gradual contraction. Originally most of the Acts did not allow compensation for what are known as occupational diseases, that is, diseases such as blood poisoning or similar diseases, which result because of the fact that for a period of time the workman has worked with a certain substance, or has been compelled to work in a certain place. In some of the states occupational diseases are covered by the Compensation Act.

I assume that every one here understands what is meant by the Workmen's Compensation Act. Briefly, instead of the old Common Law cause of action, based on negligence, there is now substituted an Act which provides a schedule of benefits to be paid to the injured workman for injuries by accident arising out of and in the scope of his employment. These payments are, of course, paid irrespective of whether anybody is negligent. There is, of course, generally a proviso that the workman shall not recover if guilty of wilful negligence, or disobedience, or if intoxicated. These Acts provide certain allowances to the widow and children for a death, running generally around $5,000. They provide certain amounts per week ranging from $12.00 to $20.00 for disability. Some Acts continue these disability payments for four hundred weeks, some for three hundred weeks, some for life. Generally specific allowances, that is, compensation for a certain number of weeks, are allowed for loss or injury to arms or legs, that is, in brief, specific payments per week are allowed to the injured workman or to his family in case of his injury or in case of his death. It is generally provided that these cannot be assigned or garnished and are payable only to the beneficiaries provided. These Acts also generally compel the master to furnish medical attention and hospital care. A great many of the Acts limit the medical and hospital expense to $200.00. Some, like the Nebraska Act, provide for unlimited medical and hospital expense.

In Germany the medical treatment for the first thirteen weeks was left to the State Sickness Insurance, the cost of which falls principally upon the workman. The British Law, in the beginning, did not obligate the employer to furnish any medical treatment, but left him free to do so as his interests might dictate. The French Law obligated the employer to pay for all necessary treatment and gave the injured workman the choice of the physician. The result of the French Law, according to Mr. F. Robertson Jones, Secretary of the Workmen's Compensation Publicity Bureau, has been that the injured workman falls wholesale into the hands of shyster doctors who mis-use their opportunities to exploit industry unmercifully in merely multiplying needless treatments and needlessly expensive treatments, and also prolong disabilities and prevent cures through mal-practice and certifying fake disabilities. In view of the French experience, when the Compensation Acts were first adopted in this country, the obligatory medical benefit was limited and the choice of the physician was given to the employer. Since then the tendency has been to remove all limits upon the medical benefits. As a result, the cost of compensation has gradually risen and the cost of medical benefits in the State of Massachusetts, where they have an unlimited medical allowance, in 1926, ran about forty percent of the cash compensation. In Massachusetts, the medical benefits cost, in 1913, $414,195.00; in 1922, $1,975,746.00.

The first Nebraska Act was passed in 1913. It covered disability resulting from injury caused by accident arising out of and in the course of the employment of the servant, except when caused by wilful negligence on the part of the employee. It covered employers employing five or more persons in their regular trade or business. It excluded from coverage household domestic servants, farm laborers and railroads engaged in Interstate Commerce. The maximum compensation allowed was $10.00 and the minimum was $5.00 per week. The clause referring to medical aid was as follows:

> "Sec. 20. (Medical aid). During the first twenty-one days after disability begins the employer shall be liable for reasonable medical and hospital services and medicines as and when needed, not, however, to exceed two hundred dollars in value, unless the employe refuses to allow them to be furnished by the employer; Provided, however, that where the injured employe refuses or neglects to avail himself of such medical or surgical treatment, the employer shall not be liable for any aggravation of such injury due to said neglect or refusal."

The Act further defined injury as meaning:

> "Only violence to the physical structure of the body and such disease or infection as naturally results therefrom. The said term shall in no case be construed to include occupational diseases in any form or any contagious or infectious disease contracted during the course of employment or death, due to natural causes not occurring while the workman is at work."

This Act defined accident as meaning:

> "An unexpected, unforseen event, happening suddenly and violently, with or without human fault, and producing at the time objective symptoms of an injury."

Thus it will be seen that the earlier Act limited the weekly disability to $10.00 per week and covered only injuries resulting from accident, arising out of and in the course of the servant's employment, not including occupational diseases. In 1917 an amendment to the Compensation Act was passed, still limiting the medical aid, which includes hospital expense, to $200.00. Generally speaking, the medical aid had to be rendered within the first twenty-one days, with the exception that in cases of dismemberment or injuries involving major surgical operations, the employer was liable for medical and hospital care beyond the twenty-one day period, not however, in any event, to exceed $200.00. By this Act the maximum amount of compensation allowed was increased to $12.00 per week and the minimum increased to $6.00 per week. In 1919 this Act was again amended and the allowance per week was increased to $15.00. The clause with reference to medical and hospital care was not amended. In 1921 the Act was amended so as to cover unlimited medical and hospital expense. The exact reading of the Act is as follows:

> "3661. Sec. 111. Medical Aid. The employer shall be liable for reasonable medical and hospital services and medicines as and when needed, subject to the approval of the compensation commissioner, not, however, to exceed the regular charge made for such service in similar cases unless the employe refuses to allow them to be furnished by the employer. In cases of injury requiring dismemberment, or injuries involving major surgical operation, the employe may designate to his employer, the physician or surgeon to perform the operation. If the injured employe refuses or neglects to avail himself of medical or surgical treatment furnished by the employer except as herein and otherwise provided, the employer shall not be liable for an aggravation of such injury due to such refusal and neglect."

This section is still in force so Nebraska is now in that class of states allowing free and unlimited medical and hospital expense. The Act does provide, however, that the employer may select the physician except in cases of major operations. It might be of interest to you to know the result of this liberalizing Act. I do not want to bore you with statistics, but I take the liberty of calling your attention to a few of them included in the report of the Department of Labor of the State of Nebraska for the two years ending December 31, 1927:

Year	Number of Accidents	Medical and Hospital Expense	Compensation
1915	4082	$ 25,422.89	$ 24,923.62
1916	10822	49,118.87	76,143.50
1922	13932	181,231.56	526,715.46
1925	17074	319,806.63	623,042.77
1926	18821	320,156.39	673,269.12
1927	19045	300,390.24	692,594.15

Thus it will be noticed that in 1916 there were some ten thousand accidents and the medical and hospital expense was $49,000 plus. In 1926 there were some 18,000 accidents, but the medical and hospital expense had gone up to $320,000 plus. This increase has raised a storm of protest from employers generally. Most of the blame falls upon the doctors. The employers see the doctors getting very nearly fifty per cent of the amount paid the workman and they see this amount being paid for medical and hospital expense constantly increasing. The result is, as I have said before, that there is a wide-spread criticism on the part of the employers of the Compensation Act. Employers generally do not criticize the policy of the Act but do, of course, complain of the increase in rates.

Of course, one of the causes of this increase in medical and hospital expense is the liberalizing of the Act and the taking off of the $200.00 limit. Another cause of this ever-increasing medical and hospital expense is the tendency upon the part of a small percentage of physicians and surgeons to purposely pad their bills and increase the medical expense. When times are hard and collections are slow, to some of your brethren a Compensation case is a Godsend. The greedy physician keeps the workman in the hospital for a longer period than he should. He keeps him coming to his office day after day for certain treatments and for certain dressings. He, knowing that an insurance company is obligated to pay in the end, feels very free to call in consultation various experts, and in the end, if there is any doubt of it being a Compensation case, that is, any doubt as to whether the man was disabled from the result of disease or from the result of an accident, furnishes the testimony which makes it an accident.

You would be surprised to know the number of your brethren who, after treating a workman, for the purpose of making secure the collection of their bill, actively engage in the promotion of compensation claims, and also engage in their trial before the Compensation Commissioner, taking an interest in the procurement of attorneys and in testifying to facts sufficient to establish the claim as a compensable one, and hence in the end collect their bill for services.

In 1927 the total number of non-compensation cases was $11,841, that is, there were that number of accidents which arose under the Act which resulted in no disability, or no loss of time, yet the medical expense was $82,860.85. During this same year, there were 454 cases where there was one day of disability. The medical expense was $2,696.90. During the same period there were 461 accidents resulting in two days of disability. The medical expense was $13,254.50. During the same period there were 447 accidents resulting in three days disability. The medical expense was $3,343,86. During the same period there were 344 accidents resulting in four days disability. The medical expense was $2,814.30. During the same period there were 263 accidents, resulting in five days disavility and the medical expense was $2,453.15. There were 265 accidents, resulting in six days disability, and the medical expense was $2,553.53. There were also 319 cases resulting in seven days disability and the medical expense was $4,048.75. This was a total of 14,394 cases for which no compensation was paid to the injured man and yet the medical expense was $104,125.84.

I am simply giving you these figures for your information. I am not making any comment on them, and I am not saying that they are too high or too low. I am simply stating that the liberalizing amendments to the Act increasing the benefits under it and taking off the limit of medical and hospital service allowed have resulted in increasing the insurance rates for compensation insurance in this state much in excess of those in Iowa and in adjoining states.

Another factor which tended to increase the compensation rates in Nebraska is, of course, the liberal construction given the Act by our Courts. We have a clause in the Act which provides that if an employee received an injury which in and of itself would only cause partial disability, but which, combined with a previous disability causes total disability, the employer shall only be liable as for the partial disability so far as the subsequent injury in concerned. It has been impossible to get the Courts to pay any attention to this section. Our Court has held that if an injury occurs to a workman afflicted with syphilis, and if the union of a bone that is broken is delayed because of this disease, nevertheless, the master is liable for compensation for the entire period of disability. Our Court has also allowed recoveries for hernia and has allowed recovery for disabilities resulting from accelerated or lighting up dormant diseases, and thereby causing disability. For instance, a man has arthritis of his spine; he receives an injury to his back which lights up the disease; disability results and he recovers compensation. It he happens to be a man along in years and about ready to quit anyway, it means a life pension.

This really makes the Act one providing for sick benefits and old age pensions rather than a law providing compensation resulting from occupational accident. In addition to this, we have disabilities resulting from functional neurosis, traumatic neurosis, traumatic hysteria and so forth. A man at work on his scaffold slips and falls twenty feet, striking his shoulder and hip, suffering a severe bruise and laceration of the scalp. He is dazed and incoherent for some hours after his removal to the hospital, but the next day appears much better. The x-ray shows no evidence of fracture of any bone. Careful physical examination fails to disclose any severe injury. Can one predict that by the time the bruises and lacerations are healed this man will be ready and eager for a return to work? One cannot. By the time the tissues have healed a veritable host of symptoms have made their appearance. The injured man begins to complain of pain in the head and neck, extending down to the arm. The pain is dull and increases by any effort. He has severe dizziness. He notices a sense of pressure at the top of his head. He is unable to sleep. He becomes depressed and irritable, easily moved to tears. Months pass. Surely every one believes the rest that he is having, to say nothing of the medical attention given him and adjustments to his cervical spine surreptitiously achieved by a visit to a chiropractor would make it possible for him to return to work. On the contrary, he loses weight and presents a picture of hopelessness, and in his opinion and that of his family, he is a permanent and total invalid. The employer, unless a lump sum settlement can be made, must pay compensation for this class of cases for a long period in the future.

From a brief outline of these facts, it is apparent that the physician plays a most important role in the administration of this Act. All that the servant and all that the employer can ask is that the physician be honest and that he co-operate in an effort to rehabilitate the injured workman rather than to make him a pensioner. The physician should not lend himself to make a compensation case where the real and true facts would not make it one. Every one is interested in the injured workman getting 100 per cent of what the law allows him, but not 125 per cent, or 150 per cent, of what it allows him. A too liberal administration of the Act and too liberal interpretation of the Act by the Courts, and an abuse of the unlimited medical provision in the Act will lead in the end to legislative amendments and restrictions which are really not necessary if the Act can be honestly administered and interpreted by all parties.

I have not as yet touched on many of the legal aspects of the Act pertaining to physicians. Under the present law a physician does not have much standing when it comes to enforcing the collection of his bill in a Compensation case. You will notice the Compensation Act provides that the employer shall be liable for reasonable hospital and medical service, subject to the approval of the Compensation Commissioner. Suppose a physician is called in in a simple Compensation case and does not have any direct contract with the employer, and is advised that it is a Compensation case. He treats the man and the man gets well. If the man himself is unwilling to file a claim before the Compensation Commissioner to enforce payment of this medical bill, it would seem that the doctor is out of luck for our Court has held that a physician has no right himself to start an action before the Compensation Commissioner to enforce payment of his bill. He cannot go into the Courts because the Courts are without jurisdiction in such a matter. Recently an award was made generally for medical expense, the Commission, however, not fixing the exact amount. The injured plaintiff then brought suit in the Municipal Court, in the City of Omaha, alleging that an award had been made for medical expense, and asking that he receive a judgment for the amount allowed. The Court held, however, that he was without right to maintain the suit as the Compensation Commissioner had exclusive original jurisdiction to determine the amount to be recovered for medical and hospital service. Of course, as a matter of fact, in nine cases out of ten, both the compensation and medical expense are paid without any controversy arising. I notice in the report of the Department of Labor that in 1927 there were 19,045 accidents reported; that there was paid, both for compensation and medical expense, the sum of $993,425.51, and that during the year 1927 there were only 385 petitions filed for hearing, and only 399 cases formally heard.

You, of course, are all aware that the Compensation Commissioner has promulgated a fee schedule. He does this under the authority of the provision providing for the allowance of medical expense subject to his approval, also under an express statutory provision empowering him to promulgate such rules and regulations as are necessary to carry out the Act. Apropos the collection of fees by the physician for services rendered and the regulation of the amount of them, the Nebraska Compensation Survey Commission, authorized by the last Legislature, recommended the following amendments to the Act:

1. That the Compensation Commissioner, with the advice and assistance of such experts as he may deem necessary, be authorized to establish a medical and hospital fee schedule which may be changed and adjusted from time to time as circumstances may warrant.

2. That the Compensation Commissioner be given the power to determine the necessity for all dis-associated operations and treatments which are not usually required by the nature of the injury involved.

(Note: The Compensation Commissioner at this time has the right to order certain necessary operations in case the man's life is not jeopardized and can deny compensation to the injured workman refusing to take such an operation.)

3. That the physicians and surgeons and hospitals be made a party at interest before the Courts and the Commissioner in order that they may secure payments for their services without relying upon the willingness of the injured man to bring the action.

4. That the Compensation Commissioner be given full authority to approve all bills for medical, surgical and hospital services, and medicines, in cases arising under the Workmen's Compensation Law. The exact language of the Act suggested is as follows:

"3043. Medical Aid. The employer shall be liable for reasonable medical and hospital services and medicines as and when needed, not, however, to exceed the charges contained in the Medical Fee Schedule adopted by the Compensation Commissioner, except as hereinafter provided. The Commissioner is hereby authorized and empowered to establish and maintain a schedule of medical, surgical and hospital fees, and in the preparation and enforcement of such fee schedule, the Commissioner shall, from time to time, avail himself of such expert advice and counsel as in his opinion is deemed necessary. Attending physicians, surgeons and hospitals are hereby required to file with the Commissioner a copy of the itemized statement covering the expense of each individual case. No money shall be paid for medical or hospital services in any case unless and until the same shall have been approved by the Compensation Commissioner. No medical attention, not directly connected with or made necessary as a direct result of the accident, and in the usual procedure of treatment of such injuries, shall be performed or undertaken without first securing the approval of the Commissioner. In cases of injury requiring dismemberment, or injuries involving major surgical operations, the employe may designate to his employer, the physician or surgeon to perform the operation. If the injured employe refuses or neglects to avail himself of medical or surgical treatment furnished by the employer except as herein and otherwise provided, the employer shall not be liable for compensation during the period of time constituting such refusal nor for any aggravation of such injury due to such refusal or neglect."

If this Act is passed, the Commissioner will have the absolute right to fix a medical fee schedule; he will have to pass on all medical bills arising under Compensation cases, and will have to approve the same before they can be paid and so forth.

In conclusion I would suggest that you bear in mind that the most important part of the Act is to rehabilitate the injured workman and get him back into industry again. You should become acquainted with the Act and endeavor to function under it. Fees in treating Compensation cases should be in line with the Act, or else limitation of medical allowances will be incorporated in the Act by legislative amendment or physicians will be appointed to treat these cases.

DISCUSSION

DR. J. W. DUNCAN, (Omaha): Mr. friend, I may say my close friend, Mr. DeLacy, has drawn rather a harsh indictment of the medical profession as its activities come within the scope of the Compensation Law. In his address he has marshalled his statistics very well and presented the case of his clients exceedingly well.

Using the same set of figures from which Mr. DeLacy drew his conclusions the following facts are borne out:

1.	Amount of premiums collected in 1927	$1,573,000
2.	Amount of premiums expended in 1927	1,000,000
3.	Total paid for medical aid	300,000
4.	The average cost for medical aid in those cases which had no disability was	7.00
5.	The average cost for those cases in which there was no compensation paid was	7.00
6.	Those cases in which there was disability, the average compensation paid was	150.00
7.	The same group, the average medical expense was 22%	42.00
8.	The average cost for fractures and dislocations was about	33.00
9.	The average cost for hernias was slightly more than	100.00
10.	Less than one case in 2000 had medical expense of over	100.00
11.	Nearly $600,000 was paid for the underwriting of the Act, twice as much was paid for medical and about an equal amount paid in compensation.	
12.	In 1922 the average medical cost per case was	14.00
13.	In 1925	12.00
14.	In 1926	13.50
15.	In 1927	15.00

It is important to remember that medical expense includes, under the Compensation Act, not only doctors' fees but also all other expense connected with the rehabilitation of the patient, such as hospital bills, x-rays, medicines, prostheses, physiotherapy and so forth. In the annual report of the State Department of Labor no itemization of the cost of these various items is made but anyone acquainted with the care of the sick or injured will agree that at least one-third of the expense incurred may be properly placed under the above items, leaving for the physicians approximately $200,000 for the care of about 20.000 compensation cases, or an average of ten dollars each. The report of the State Labor Department also shows that within the year 1927 the medical expense, under the Compensation Act in Nebraska, dropped only a little less than 10% from the previous year. Under the Iowa State Compensation Law, which is constantly referred to by Nebraska Manufacturers as a model Act, within one year the cost of medical was increased 250% and though there is a limit of $100 on medical expense in that State the average medical cost was approximately $10 at the last figures available to me.

The greatest increase in medical expense took place in the years 1919, 1920 and 1921 when costs of all kinds were rising rapidly and it is entirely unreasonable to expect that medical expense in connection with the Compensation Act should not have risen likewise.

In view of the above cited undeniable figures, the charge that the burden of cost of compensation insurance in Nebraska is to be laid largely at the door of medical expense is unwarranted. Anyone with a fair knowledge of the workings of the Act in Nebraska will agree that the high cost of the insurance is largely, if not entirely, due to the following causes:

1. Too liberal interpretation of the Act which makes conditions compensable which do not properly come under the Act and which it was not the intent of the Law to insure the employer against: Hernia (with rare exceptions), pneumonia, sun stroke, various types of gangrene not due to injury, appendicitis, perforated ulcer, hemorrhoids and the various forms of senescence, to mention only a few. These conditions are brought under the Compensation Act usually on the ground that the occupation was contributory to their development or that the condition already existed and was aggravated by the employee's work. About the only conditions that seem to have been rigidly excluded are acute tonsillitis and ectopic pregnancy. If Health insurance is to be masqueraded as Compensation insurance, the cost of medical will inevitably rise.

2. Lack of safety devices and ordinary precaution against hazard. i. e.: Slippery floors, rickety steps, poorly lighted stairs or corridors, unsafe machines, putting men at hazardous work who have obvious physical defects. etc.

I have personal knowledge of a messenger, blind in one eye, who drives a motorcycle about the streets in Omaha who has had three accidents and who still remains at the same employment in spite of warning to his employer. These are only a few of the factors within the employer's direct control that add enormously to the premium rates.

3. Unwillingness of employer to return employee to work when he is able. All of us know that in the majority of cases of injury the final and complete recovery from injury takes place only when the injured person has returned to work and put to active use the injured parts. Too often the injured employee, when he is directed to return to work or light duty is met with the statement by the employer that he is not wanted until he is entirely well and until he is able to do his former work. He is then put back on the street in a most unwholesome frame of mind and one very favorable to the development of the neuroses or hysteria so commonly seen in compensation cases.

4. Collusion between employer and employee to establish compensability. Any doctor who has had experience in treating injuries under the Compensation Act will recall instances of this practice. Stiff and painful backs of senile or focal origin become back strains and varicose ulcers are given a traumatic origin when a delayed accident report is made out by the employer whose philanthropy is returned to him in increased premiums for which the medical profession is held responsible.

5. Unwarranted litigation and support of unfair claims by lawyers and doctors.

Mr. DeLacy says, "A physician should not lend himself to make a compensation case where the real and true facts will not make it one." But, I believe he will agree with me that in practically every such case the action is initiated by an attorney who often goes into court in spite of the advice of the physician that there is no just ground for litigation and sometimes awards are made contrary to the advice of the physician who has treated the injured party and who, after all, is best able to judge whether or not a disability is present. For every compensation case "made" by a physician there are countless ones "made" by attorneys. Litigation under the Act with the appearance of medical witnesses before the Commissioner naturally ads to the expense which is included as part of the cost of rehabilitation of the injured employee.

The Commission for the Survey of the Compensation Act authorized by the Legislature of 1927 and appointed by Governor McMullen consisted of representatives of the Public, of Labor and of the Employers. As might have been expected one of the groups most vitally concerned in the proposed changes, namely, the medical profession, was not represented on the Commission.

When the Legislative Committee of the Nebraska State Medical Association recently appeared before the Survey Commission the discussion developed that at least some of that body had preconceived and rather well defined opinions as to the excessive charges made by doctors in compensation cases and cited different instances within their personal knowledge. General application was made of isolated evidence of unreasonable fees and the profession as a whole catechized. The members of the profession appearing before the Commission did not deny that there had been instances of excessive bills renedered, unnecessary consultations, too prolonged and too frequent dressings. They declared, however, this was not a common, and was indeed, a rare practice and that this assertion would be borne out by figures as to the average cost of medical care for compensation cases.

They assured the Survey Commission that the medical profession is anxious to see the Compensation Act fairly and impartially administered without imposing a burden without industry. Upon being pressed for immediate recommendations the following were, in a broad way, made:

1. That no absolute limit, such as requested by manufacturers, be placed upon medical expense. As an undesirable alternative to the present non-limit provision, a sum, approximately $200, should be set beyond which expense could not go except by the proper authorization.

2. That a permanent board representing industry, labor and the medical profession be set up to pass upon disputed questions involving medical expense and whether or not a disability exists in specific cases and if it exists, the degree, and allied matters.

3. That if the Commission did not feel it practicable to recommend the establishment of such a board that the Labor Commissioner be required to be advised by a regularly appointed physician as to

the reasonableness of disputed medical bills and of disability claims.

In its report the Survey Commission recommends, "That the compensation commissioner, with the advice and the assistance of such experts as he may deem necessary, be authorized to establish a medical and hospital fee schedule, which may be changed and adjusted from time to time as circumstance may make it advisable."

This recommendation apparently gives the compensation commissioner additional power in the adjustment of bills. He will have to pass on all medical bills arising under compensation cases and he will have to approve the same before they can be paid. This would be acceptable, we believe, in the face of the proposed alternative of an absolute limit upon medical.

The Survey Commission also recommends, "That physicians, surgeons, and hospitals be made a party at interest, before the courts and the commissioner in order that they may secure payment for their services without relying upon the willingness of the inpured man to bring the action."

Under the present Act a physician cannot bring action in court to enforce payment of a compensation medical bill. He must rely upon the willingness of the injured man to bring the action, there being no other recourse. The above recommendation provides a remedy for this manifestly unfair situation.

Two years ago a representative of the Manufacturers' Association sponsored in the Legislature a bill which provided an absolute limit of $100 for medical expense. There was a further provision that if a physician made a charge or attempted to collect an amount in excess of the fee schedule established under this law he thereby automatically forfeited all right to any fee. There was some doubt as to the constitutionality of the provision itself but little doubt of the type of mind that conceived it.

The medical profession had nothing to do with the drawing of the original Act or the various amendments to it. It had nothing to do with the removal of the medical limit which was once provided for in the Act. It will actively oppose any effort to reinsert a clause providing for an absolute limit or for any reductions in the fee schedule as now drawn. It recognizes that there have been abuses of the medical provisions of the Act. They are not wide spread or common and the profession as a whole will do whatever it can to help overcome them. It will not accept entire responsibility for the high cost of compensation insurance in Nebraska.

DR. ERNEST KELLEY, (Omaha): It has been extremely interesting to listen to Mr. George De Lacy's description of the manner in which the law has changed covering compensation of the working man, from the old German and English laws down to the present day ones that we have and it strikes one that, perhaps, our present discussion is making much ado about very little, for the reason that the whole thing is self-regulating, based on the evolutionary change that the sociological status of the working man shows as time goes on.

In the ancient times, when the laborer was a mere serf, unprotected by law, he was dependent upon the bounty, gratuitously given, by those for whom he worked. As his position gradually rose in sociologic importance, laws were enacted to protect him in keeping with his standing.

At present the working man is very well protected, in fact, it would appear that the present day trend is in the direction of state medicine.

While it is impossible to stay the wheels of evolution, it may not be impossible to steer them away from the possible disaster of state medicine, and it would be extremely interesting to us for Mr. DeLacy to give us some of his thoughts about how to prevent this from happening.

DR. ROBERT SCHROCK, (Omaha): The speaker of the evening has cited for us several examples of poor conduct, both professional and financial, on the part of the Medical profession in carrying out their part of the Nebraska Workman's Compensation Act. Considering the mass of work to be done and the number of doctors involved, is it not correct to state definitely that abuse of the law is sufficiently rare to make those cases outstanding. Unquestionably "padding" of compensation accounts is done by some doctors. This bad practice I believe to be the result of the "account cutting" tendency of the old fashioned adjusters. Fortunately the present day adjuster is a different type of business man.

No mention has been made of the fact that a personal injury case makes more rapid progress with a doctor alone, than he does with the combined attention of a doctor and lawyer. Legal advice at many hearings creates sufficient atmosphere to thoroughly cloud the real facts. Over-emphasis is placed on both the violence of the injury and the resulting disability. This legal attitude tears down in the patient all the morale that he may have possessed. Disabilities at a Labor Commissioner's hearing are always greater than during the week preceding or following. Responsibility for this cannot be placed upn the medical profession.

We are informed that $998,587.00 of the premiums paid by the employers is spent for the injured employee, and that amount covers charges for professional services, hospital care and compensation. The last element includes the awards for permanent disabilities both total and partial. Careful and detailed analysis is made of these various elements.

As a result of this analysis, the medical profession is repeatedly informed that the costs of caring for the injured employee must be decreased. We are much more interested in decreasing the resulting disabilities in the employee and returning him to a gainful occupation. More adequate cooperation and encouragement from the employer, with less active adverse aid from the "Attorney for the Plaintiff" will decrease disability awards.

No analysis is made of the $587,692.00 of compensation funds remaining after payment of costs of medical care and compensation. It is proper to distribute this under three headings: Administration costs, legal services, and profit to the insurance companies. In no report do you find an analysis of these costs.

In financial matters involving sums such as $1,573,649.00, doctors are not experienced. I would suggest that in the present consideration, we are being treated with "juvenile diplomacy". The attention of the profession, the employers and the law-makers, is being directed toward the $998,957.00 paid to and expended for the injured employee. The remaining $587,692.00 or about 30% of the gross income is used in distribution of the benefits for which the law was enacted.

Administration costs, including legal fees, are suggested to you for as careful an analysis as has been given to the expenditures for the care of the employee.

MEMORY LESSON

A good thing to remember—
A better thing to do:
Is, work with the construction gang
And not the wrecking crew!

—Anon.

THE PURPOSE AND POLICY OF THE UNIVERSITY OF NEBRASKA HOSPITAL*

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The primary and most fundamental purpose of the University of Nebraska Hospital at Omaha is to provide a teaching clinic for the College of Medicine, under the direction of the Board of Regents of the University. This purpose must be kept in mind in formulating rules and regulations governing admission of patients and conduct of the hospital. Accordingly the beds are divided into services representative of the clinical departments of the College, and are assigned in numbers according to each department's representation in medical education.

UNIVERSITY OF NEBRASKA HOSPITAL, OMAHA

The ward arrangement of the hospital and assignment of wards to particular services further complicates the admission of patients. This differs from the ordinary hospital where admission is controlled chiefly by empty beds, and is not limited by services. It would be quite easy to fill the University Hospital with patients presenting only a few common conditions, chiefly surgical, with loss of necessary teaching clinics in other departments. For this reason sometimes surgical cases cannot immediately be admitted, although there may be empty beds in other wards. This applies particularly to the specialties of surgery, which must be limited in an undergraduate College of Medicine. The following division of beds and services (shown in the first column below) is now in operation with a capacity of 180 patients. When the second unit of the hospital is fully equipped there will be a maximum capacity of 250 patients (classified as shown in the second column):

	Now Operating	Full Capacity
Internal Medicine	39 beds	60 beds
Neuro-Psychiatry	16 "	30 "
Dermatology	3 "	5 "
General Surgery	34 "	50 "
Orthopedic Surgery	10 "	15 "
Urology	8 "	10 "
Fractures	5 "	5 "
Obstetrics & Gynecology	30 "	40 "
Pediatrics	30 "	20 "
Oto-Rhino-Laryngology	7 "	10 "
Ophthalmology	3 "	5 "
Total	180 "	250 "

The admission and retention of chronic and incurable cases into an active hospital always is a problem. This is even more of a problem in a teaching hospital, for these are the patients who most need financial assistance and who become a burden upon the family or community on account of the duration of their illness. A limited number of these cases are valuable in medical education, and the University Hospital is glad to admit as many as possible for limited periods of stay, until thorough examination and diagnosis have been made. If no further service other than bed care can be offered, these patients cannot be maintained for long periods without defeating the University Hospital's primary educational purpose. County hospitals, orthopedic hospitals, psychopathic hospitals, homes for the aged and incurable are established primarily for county and state institutional service. The University Hospital cannot undertake to replace these institutions, although it may assist and relieve them to some degree. The most advantageous working relationship would be for the University Hospital to undertake the hospital care of acute and curable conditions of institutional patients and to be able to transfer such cases when institutional care only is needed. It is difficult and uneconomical to combine modern hospital care with institutional care. The standards of maintenance are quite different, as illustrated by the minimum cost of three dollars per day for hospital service and one dollar per day for institutional care. The quality of hospital service is bound to suffer when the major responsibility of the institution is adjusted to the lower standard.

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*Read before the Third Councilor District Medical Society meeting, Falls City, November 22, 1928.

Most misunderstandings with physicians and county officials concerning the admission of patients to the university hospital would be removed by an appreciation or clear understanding of the necessity of selection and limitation of patients in a teaching hospital. County officials are prone to consider the University Hospital a state institution to relieve them of the care of the chronic and incurable. Many physicians seem to hold a similar view, or feel that the University Hospital is responsible for all eligible patients regardless of population quota or excess of certain common types. The most desirable teaching cases are the acute illnesses, patients who can be benefited or relieved by treatment, or patients who present a problem in diagnosis. The acute illnesses are most available from near-by territory and particularly from the Dispensary clinic. Eligible outstate patients, however, are given precedence in admission when the quota of the county has not been exceeded.

The University Hospital should not be increased in size faster than the needs of medical education, and should not be burdened with an unnecessary load of state institutional or state medical service. This increases the problems of administration. Nebraska now has a large College of Medicine, measured by an enrollment of three hundred and twenty-two medical students and one hundred student nurses. The university has an obligation in the proper education of these students and the state an obligation to provide the necessary facilities for this education, to insure the return of well-trained physicians and nurses to care for the private and public health of the state. Senior and Junior classes of seventy to eighty medical students, or a total of one hundred and fifty students in the clinical years, require more than one patient per student to provide adequate modern bedside clinical instruction, and to protect patients from too much examination. A two hundred and fifty bed hospital, which is the present full working capacity of the University of Nebraska Hospital, and a Dispensary Clinic averaging one hundred patients per day, are not unduly large for this number of students. These are smaller than in most medical schools of equal rank, but are sufficient if properly managed and utilized, and supported by the medical profession in the recommendation of desirable instructive cases. There is one serious deficiency in the present clinic, however,—adequate facilities for isolation of contagious cases. A twenty-five bed isolation unit should be added in the near future, both to care for the infectious cases which are bound to arise in any hospital, and to provide a teaching clinic for this most important department. This should include five beds for tuberculosis, five beds each for measles, scarlet fever and diphtheria, and five remaining beds for prevailing infections of other types.

Some people would criticize the teaching hospital as a place where the welfare of the patient is secondary. Such criticism is unfounded in fact or acquaintance. A teaching hospital must be maintained according to the highest standards of hospital and medical practice, otherwise it would be a poor example for medical students. No mistake or omission can be covered up in such a hospital. The necropsy percentage of 89% in the University of Nebraska Hospital speaks for itself in the conscientiousness of diagnosis and treatment. Written permission of relatives is obtained in all necropsies. The quality of the practice of medicine in hospitals today is measured more by necropsy percentage than by any other single factor.

In the actual care of a patient, his welfare must always be the primary objective. The patient's reaction to a teaching hospital is perhaps the best guide to its quality of personal service. At a recent meeting in San Francisco of representatives of teaching hospitals this question was discussed and without exception it was reported that such criticism on the part of patients was not a problem and almost did not exist. The only criticism brought to attention is the occasional delay while special tests are being made or clinics held, but the patient more often appreciates this extra attention. At Nebraska every patient admitted to the University Hospital is assigned to a medical student who examines and follows the progress and treatment at the bedside. Both patient and student benefit from the daily ward rounds and thorough study made of each case. In fact, the patient usually considers the student his best friend and ranks him near the attending physician in appreciation of his personal service.

The question of financial eligibility in the admission of patients to the University Hospital is the source of much trouble, for there is no agreement or established standard which can be followed to determine the eligibility of patients for free medical care. This is particularly troublesome when judgment is passed by physicians without a thorough study of all facts involved, and in which criticism is made without the opportunity of presenting the facts. The hospital desires to protect itself and the medical profession from abuse, and is only too willing to make a careful investigation and report on every case of suspected hospital abuse. The difficulty, however, is not so much due to inadequate investigation as it is due to a difference of opinion concerning the eligibility of patients, or to the necessity of accepting a properly filled out application blank. This application, over the signatures of a local physician and county official, certifies that the patient is unable to provide private medical care and is eligible for admission to the University Hospital. It is difficult for the hospital to dispute this certification, and why should it be held responsible if the patient is improperly recommended by the physician and county official? However, a careful financial investigation is made of every patient on entrance, both by questioning of the patient or family, and often by a letter of investigation to a local bank.

It perhaps is useless to try to agree on standards of financial eligibility for free medical care. Trained sociologists are unable to agree. Every physician in his practice renders a great amount of such free service, both in willing free work and in unpaid accounts. Surely the medical profession is interested enough in medical education to be willing to refer this class of patients to the University Hospital when possible. Careful and comprehensive studies of free clinic abuse have established repeatedly that the percentage of real abuse is always less than five per cent, nearer one per cent. Surely this is a small contribution which the medical profession of the state might willingly make for medical education. The attending staff of the hospital devote much more in time and service without remuneration.

A common complaint is that patients in the University Hospital are known to own a home or other property. The position rarely would be taken by a physician that a man of small means and large family, with disability or chronic illness, must pay in full for medical service until he becomes destitute. The University Hospital does not take this position and feels justified in assisting deserving individuals when they are facing financial ruin or inadequate medical care through illness. These problems have been particularly numerous since the war on account of the decrease in property values and the encouragement of credit buying. Many an individual, both in the city and country, has found himself in a situation where his total indebtedness exceeded the value of his property holdings. It is difficult to refuse free medical care to such an individual until he has disposed of all of his property, particularly when that property represents his only safety from homelessness and dependency in advanced age. The ownership of an automobile seems to be the inexcusable offense against free medical care. Actual investigation discloses that this usually is a friend's car, or that it is a "flivver" worth from $15.00 to $75.00, which is used for making a meager living hauling rubbish or the like. Or it is necessary as a means of transportation to work from a $500.00 home outside the city limits, bought through high pressure real estate salesmanship—$10.00 down and $10.00 a month the rest of his life—cheaper than renting.

Another frequent complaint is that relatives of a patient in the University Hospital are well-to-do and capable of caring for him. This may be true, but is not often a legal responsibility. When such relatives do not choose to provide needed care, it is difficult to make them pay and the University Hospital cannot well refuse the patient admission when properly recommended by a physician and county official.

No private patients are admitted to the University of Nebraska Hospital, except emergency cases. There is only one single room and one double room adjacent to each sixteen-bed ward, in some cases less, and these are insufficient for isolation of seriously ill or infectious cases from the wards. A private wing to the University Hospital is not desired. However, a nearby affiliated private hospital would offer advantages to both staff and patients in convenience and utilization of the college laboratories.

The medical profession very properly is disturbed by whatever appears to be an advance towards state medicine. A university hospital which is maintained primarily and strictly for medical education is not an advance towards state medicine, even though patients who are able to pay occasionally obtain entrance. A Class A medical college is an asset to the medical profession of the state, both in its stimulation for better medicine, and in its training of well qualified physicians to practice in the state. The real danger of state medicine will rest in the failure of the medical profession to meet the demands of the public for adequate medical care. We have always had with us certain kinds of state medicine, as in our insane, orthopedic, and county hospitals, and in lesser degree in our institutions for the aged, and the feeble-minded. State medicine is hard to define or delimit. The problem is complicated in recent years by the increased education of the public in modern medical diagnosis and treatment and by the increased cost of obtaining adequate medical care. The demand of the public for better service is leading to readjustment in medical practice. Many small medical centers are being developed, and specialization is increasing. Good roads and the automobile enable the people and the doctors to travel greater distances to and from these medical centers in county seat or smaller towns. The smallest towns, however, are suffering from this exodus of both doctors and pay patients to the medical centers, and many are without physicians. This is not the fault of the medical college, but is due to progress in medicine, education of the public, and world-wide economic factors. The need of minor and emergency medical service at moderate cost in the smaller communities is increasing and if it is not met by the medical profession, may lead to undesirable substitutes.

In the larger cities the real danger and encroachment on private medical practice is not the teaching hospital, but is industrial and insurance medicine. Yet most physicians who criticize the University Hospital as a trend towards State Medicine would not hesitate to accept remunerative positions in these fields, or take out sick benefit insurance for their own personal safety. Perhaps this is entirely proper, but nevertheless it should be recognized as a form of group protection in medicine which reduces the private practice of physicians. Not all individuals of small means can belong to such organizations and receive this protection, and must face dependency or inadequate medical care in case of serious or chronic illness. This is the medical profession's problem, if they are to maintain leadership and safety in private practice. The Medical College Hospital is assisting in the supplying of competent physicians. Its limitation in size and location will prevent it from ever becoming a menace in state medicine. Its maintenance as a strictly educational institution, as the University of Nebraska Hospital, merits the support of the medical profession, both for the advancement of medicine in the state and for the maintenance of a creditable medical institution. The medical profession has been given the responsibility of recommendation of patients to the University Hospital. No patient is admitted without the signature of a local physician of good standing. The service the hospital offers to patients is excellent. Its teaching clinics must be maintained. There should be more interest and reference of eligible patients to the hospital by outstate physicians. The hospital authorities desire and always have tried to work through the physicians and not directly with patients or lay organizations in admission. This policy is still being maintained, but with a two hundred and fifty bed hospital, necessary for the proper clinical instruction of over three hundred medical students, increased interest and support is needed, not to increase the free care of patients, but to provide an adequate clinic for medical education.

ANTERIOR POLIOMYELITIS*

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Anterior Poliomyelitis (Polioencephalomyelitis) is an inflammation of the central nervous system and the symptoms are the result of a defense reaction of the tissue involved, against the intoxication. The syptoms, therefore, depend upon the localization of the inflammatory process.

Wickman's classification of poliomyelitis is based upon the defense reaction of the tissues involved and one can but conclude by the variety of reactions that the disease is more than an infection of the central nervous system—it is in fact a general infection.

The French observers (a) have isolated an ultramicroscopic filtrable virus with variable virulence and existing, first, in a form bound to the epithelial cells of the mouth and attenuated in the saliva; second, a more virulent form in the vesicles of herpes; third, a virulent form in the carriers of encephalitis and fourth, in the central nervous system of active cases of encephalitis lethargica.

The organism, it is believed, acquires an exaggeration of virulency and thereby also acquires an affinity for nerve cells and as a result cerebral tissue becomes involved as in the case of encephalitis.

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*Read before the Lancaster County Medical Society, October 1, 1928.

The salivary virus; the virus of herpes; and the virus of encephalitis are, it is believed, only variants showing different degrees of pathogenicity all from the same organism in origin.

A comparison of the properties of the virus of the encephalitis group with the virus of rabies, of poliomyelitis and the virus of vaccination, show characteristics in common in the laboratory and in common show an elective affinity for the ectoderm.

"Thus, the organism of vaccinia (b) shows a constant and obligatory affinity for the skin and cornea; the encephalitis virus, as already stated, attacks either the skin or nerve tissue, according to its virulence; the rabies virus behaves in the same way, except that it causes no local lesions and only profits by its affinity for epithelial structure whilst traveling up the nerves to the cerebral centers; the virus of poliomyelitis shows no affinity except for the gray matter of the spinal cord. For these reasons Levaditi suggests that the disease caused by this group should be designated "The Ectodermoses".

The anxiety of a community places a double burden of responsibility upon the physician when, no matter how observing his clinical study of his patient, in the presence of an epidemic he still feels a lingering doubt when he is called upon to discriminate between a mere febrile disorder and a pre-paralytic stage of poliomyelitis.

A resume of the clinical evidence of the disease may serve to place the physician on his guard at this seasonable period of the year.

The usual epidemic type of infantile paralysis begins abruptly; the temperature seldom reaching above 101½; and the pulse rate is out of harmony with this temperature, ranging from 10 to 140.

There are three rather constant features due to inter-cranial disturbance, namely, the headache; the lassitude and the pain in the extremities.

Lassitude is hardly the proper descriptive term. The patient's situation amounts to a prostration and again this prostration is out of harmony with the temperature reaction, a point of clinical interest and of diagnostic value.

The fact that poliomyelitis is a general disease, invading all the tissues of the body but showing a selective action for a certain path in the nervous tissue, prepares us to anticipate a situation which is uniformly encountered, namely, the meningeal symptoms. The meningeal symptoms may be seen as rigidity of the spine and neck muscles and an occasional tendency to head retraction. The tendency to keep the spine rigid and a disinclination to bear weight on the spine is very noticeable in children who are old enough to sit upright. This inclination to rigidity of the neck is observed as the child makes only a feeble gesture to comply with the physician's request to bend the head forward. The pain is deep seated, not in the joints but located in the back, the arms, and the legs and is fairly constant.

One of the characterizing features of the disease is the tendency to a fever remission, after a period of from two to six days, a normal temperature period, which again is followed by a rise simultaneous with the appearance of the paralysis.

There is a muscular phenomena of tremor on exertion more marked in certain extremities and appearing early in the disease. This symptom is well worth searching for and is observed in the limb or limbs that are afterward paralyzed. This may be regarded as a focalizing symptom and of importance in early diagnosis.

The general statement that reflexes are much more increased during the febrile and early paralytic stage and entirely lost later in the affceted parts is a casual summary of the neuro-muscular picture. Marked hyperesthesia is present in 90% of all cases, whenever the slightest effort is made to move limbs or when pressure is made on nerve trunks or the faintest irritation is applied to the skin. The patients are extremely anxious and fearful. In this they resemble the early stage of meningitis showing often times quite as marked photophobia and hyperacusis.

The infiltration in the cord may disturb the sensory mechanism producing paresthesia or anesthesia. The older teachings that sensory disturbance is uniformly absent cannot be maintained. From the early hyperesthesia to hyposthenia or even loss of sensation is not uncommon and may involve both pain and thermal sensibility.

The neurological picture varies, however, with the type of the disorder and Wickman has described eight distinct groups. This distinction however, being more upon general tendency than a hard and fast difference.

The types described are (c): First, *spinal;* second, *acute ascending* (Landrys); third, *bulbar* or *pontine;* fourth, *encephilitic;* fifth, *cerebellar;* sixth, *meningitic;* seventh, *neuritic;* eighth, *vegetative type,* and the *abortive.* The abortive relating only to the sudden arrest of the disorder.

In recent epidemics patients have shown characteristic symptoms of poliomyelitis and then gone to recovery without palsy. In others a mild palsy with hypertonia developed and recovery followed in a short time. These are the patients whom Wickman groups in the abortive types. He has also made the observation that the most frequent forms in which the disease terminates as above described are: (d) "First, the mild meningitic types; second, those that show the general infection symptoms prominently; third, those that have a marked influenza trend; fourth, the case with marked gastrointestinal signs. Wickman believes that 15 per cent of all cases are of this group while Mueller believes that there are more of the abortive cases than of the usual type." If this be true it is of great significance in the matter of epidemology.

The spinal fluid is usually taken for diagnostic reasons although some have faith in its therapeutic value which is not entirely impossible in that spinal fluid pressure is uniformly elevated. The fluid is clear or opalescent. The cells are increased and the globulin is positive, and of diagnostic importance is the fact that leukocytes predominate during the first 24 hours of the disease after which time the lymphocytes predominate.

The physician's problem is, therefore, to recognize the disorder in a child before paralysis has developed. Upon this rests the future of the child in his ability to withstand the attack with the smallest degree of residual paralysis.

In the matter of treatment it is unnecessary to emphasize the importance of masterly inactivity in local treatment such as massage, electrical currents or therapy procedures during the febrile and early paralytic stage. The time for these treatments if advisable is in the later stages when the acute disorder has subsided.

In considering treatment it is well to divide the subject into the consideration of prophylaxis and the treatment of the acute stage and the treatment of the chronic stage. Under prophylaxis while there is little difficulty in controlling the typical case the abortive cases, however, are rarely properly regulated.

The virus in the monkey polio seems to be found in the nasal mucuous membranes and in the feces. It seems that hydrogen peroxide 1% sol. is effective in the treatment of nasal membranes while formaldehyde and carbolic acid is effective in treating the feces.

In the acute stage a treatment has been suggested which I believe worthy of mention. I refer to the irradition of the entire vertebral column by the roentgen ray. Just as someone discovered, by sheer accident, the value of subdural air injection in meningitis, someone has, with equal awkwardness, stumbled onto the use of x-ray in polio. Reference was made in Basso's year book for 1926 to a group so treated and reported from the clinic of the Brooklyn General Hospital.

From Basso's year book (e) of 1927 we read that "H. Bordier began to use the roentgen ray on the affected region of the spine in 1911 and has made a previous report on his results. He believes that the roentgen ray causes a diminution of the inflammation and edema of the cord and tends to prevent the formation of scar tissue. He maintains that it has been proven experimentally and clinically that such exposure is devoid of danger. He gives detailed directions as to the dosage of the rays, which should be directed perpendicularly to the laminae in the affected region. He advocates also the use of diathermy and galvanism on the affected extremities. The author gives no information as to the number of cases treated or the degree of his own success, but he quotes briefly figures given by others who have treated sixty-five cases in this manner."

The Vienna schools have employed x-ray irradition during the past two years and Professor Papenhime referred to it in the clinic as a most satisfactory treatment of poliomyelitis. He credits its results to mechanical influence in the filtration processes of the anterior horn.

Marburg's (f) lecturing on neurophathology refers to the treatment and suggests that the results may be due to a change in filtration of the anterior horn by reason of the stimulation by x-ray. In harmony with the theory that the disease involves all parts of the nervous tissue and its lasting effects are exerted on the anterior horn solely by reason of the lower filtration capacity in that portion of the cord.

The treatment of the chronic stage involves a careful invoice of the damage to muscle groups as well as the degree of damage as revealed by electrical excitability. Here comes the importance of the deep continuous neutral tub as a help to the motions of the limb to the straightening out of contraction and the promotion of the special exercise under the support offered by the pressure of water. The application of casts to correct distortion and muscle transplantation is however, outside the scope of this paper.

The medical supervision of the disease is based upon the observation that one attack of infantile paralysis usually insures immunity in either man or animal for all time. With this in view, Rosenau (g) has suggested the use of blood serum from convalescent patients. In large clinics this process can be carried out and is carried out at the present time. However, in more remote districts and points removed from large clinics such a program can only be carried out when preliminary organizations makes it possible for the physician to draw upon known donors who stand ready at any time to give up quantities of blood for this work.

Rosenau (h) calls attention to the fact that "a monkey having recovered from polio, no matter how much of the virus be injected into the brain, the circulation or the periteneum it is impossible to give the animal the disease the second time. He believes that a clear cut lasting immunity therefore exists and suggests that laboratory results justify the conclusion that definite antibodies exist in the blood of such an animal for all time". He further observes that the convalescent blood of a patient mixed with active virus renders the virus incapable of producing the disease in monkeys whereas the same virus has produced the disease when not mixed with convalescent blood. The administration, as with the diphtheria antitoxin, is of service only when given early in the disease at a time before destruction of the cells of the anterior horn have occurred. (He recommends the removal of 15 cc of spinal fluid, if that amount will flow from lumbar puncture, and replacing this with 15 cc of serum. Simultaneously administering 30 cc of serum intravenously and 24 hours later he repeats the intraspinous injection.)

To quote from his reports he says: "Results have been encouraging but no one should carry the impression that we have a cure or a positive preventive in this treatment."

The use of the antistreptococcic horse serum prepared by the various biological products companies after the plan of Rosenau is too well known to require review. Comparative results would suggest that the control group of 278 cases against the 1113 cases treated with immunized horse serum would justify Rosenau, (I) who reported these cases, in concluding that the reduction in mortality and the residual paralysis in the serum-treated group was due to the influence of the treatment.

My only justification for this paper is to call attention to treatments which may be employed as an adjunct to the serum. In the light of our present knowledge the disease so insiduous and devastating one which brings terror to the community. Whatever limitation to paralysis secured by any treatment in the febrile period is that much advanced in our battle against this dread malady.

The question as to the method by which result is accomplished is entirely secondary to the one question, "will it or will it not limit the residual paralysis?"

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MEDICAL LEGISLATION*

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Legislation pertaining to the practice of medicine falls naturally into three general subdivisions.

First—Those laws directly governing the practice of medicine.

Second—Those concerned with public health and the control of diseases.

Third—Those concerned with vital statistics.

Many states have tried many different laws to direct and control the practice of medicine and so far none has been found that is satisfactory to all persons.

Because of the fact that practicing physicians and medical organizations have been leaders in promoting medical legislation, it has been thought by many of both the profession and the laity that medical legislation has as its primary object the protection of the medical profession. Nothing could be further from the truth. The primary object of all legislation on medical matters is to protect the whole people. Any other object would be subversive of the principles of American government. Not that many of these principles have not been subverted by legislation and court rulings, but we are glad to say that medical legislation, as proposed by medical organizations, has always been clear of such a charge. Let us then consider all phases of this matter from the standpoint that the good of the whole people is at stake. The fact is that some parts of valuable medical legislation are burdensome to the practicing physician, a matter that will be referred to later.

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*Read before the Nebraska Public Health Association, Lincoln, Nebraska, September 5th, 1928.

The medical profession, as individuals and through its organizations, has carried the burden of promoting progressive medical legislation for the simple reason that they, more than any other element of the population, have realized the necessity for such legislation. It is my opinion that the time has now come for this condition to be changed. It has served its day and served it well; but with the diffusion of information through all strata of society, it seems that other elements of the population should take an active part in this work.

This presentation of the subject is made in the effort to cause the members of this organization to realize the necessity and equity of reasonable legislation along these lines and to influence them to think and then to work for the maintenance and enforcement of suitable laws in regard to public and individual health.

The first subdivision of this subject—Laws governing the practice of medicine. The object of all such laws should be to assure the public that those who legally qualify to treat the sick and to advise in matters of health have sufficient intelligence and adequate information to do so correctly. In other words that they know what they are doing. It has been but a few years since this type of legislation has developed in the United States. Even at the time that I graduated in medicine the registration of a diploma from a "reputable medical college" was sufficient to secure the right to practice medicine in most states. The county clerk or some other lay official usually was the arbiter as to the reputability of a school. It will thus be seen that the term "Reputable Medical College" meant nothing. Some states had examinations of one kind or another to which men with little or no medical education were admitted. One of my most prized possessions is a license granted me by a county examining board before I graduated.

About thirty years ago well informed medical men realized that such a condition had become unbearable and started a movement for reform. The result of this movement is that all the states have better medical practice acts than they had at that time, but in nearly all states much is yet to be desired along these lines. This state now has the basis of a good working law, one which should prove satisfactory in keeping the profession at a high standard and protecting the people against incompetent practitioners. The medical practice law of Nebraska requires that one desiring to practice medicine in this state shall have a working knowledge of the basic sciences. After he demonstrates his familiarity with these he is privileged to practice any system of therapeutics he may wish. No law could be more just to all parties concerned, that is, the practitioners of the healing arts and their patients. It is but just that one who professes to treat diseases of the human body should have adequate knowledge of its development, its structure, its functions, its disorders, and its reactions to various influences.

The second division of laws pertaining to medicine is that concerning public health and the control of infectious diseases. These laws require that medical practitioners report all cases of infectious and communicable diseases promptly to the proper health authorities. In each county the sheriff, the county superintendent of schools, and an appointed physician, constitute the county board of health. In the smaller cities and the incorporated towns, the mayor, the chief of police, and an appointed physician, make up the city board of health. The State Bureau of Health is a part of the Department of Public Welfare and its work is subdivided into various sub-departments.

It is not within the scope of this paper to discuss the work of the state bureau of health except to say that throughout the time of my acquaintance with it, it has been well managed and its officials have always been anxious to cooperate with the local health departments, the medical profession, and any other persons who may bring matters of interest to its attention. Its personnel has always been competent, courteous, and energetic.

It is to the local boards that I wish to refer somewhat more at length, the city and county boards. These organizations are more closely in touch with local conditions and are of more direct importance to the average laymen and physician, and are more under the influence of local conditions. It is true that they get their authority and their rules of conduct from the state board of health and from the laws governing matters of health, but in execution of these rules and regulations their actions and judgment are effective. Nebraska is an almost purely agricultural state and in much of the state the counties are large and many are sparsely populated. A considerable element of unassimilated foreigners exists in many communities. The towns are often small, far apart, and in some localities doctors are few. These factors lead to many rather difficult situations in the administration of public health matters.

Sometimes there is direliction or delay in the reporting of contagious diseases, and when these diseases have been reported there is delay upon the part of the authorities in acting upon the report. The foreign element frequently conceals a contagious disease because of their dislike of quarantine and other restrictions. I have known a severe epidemic of scarlet fever to be spread because of concealment of a mild case. In fact, the concealment of such diseases as scarlet fever, smallpox, measles, and diphtheria, is not uncommon. All of us are familiar with such instances, and it is not always the ignorant or un-Americanized foreigner who is the offending party. It is a well known fact that the most virulent and fatal attack of any infectious disease may arise from contact with a very mild case. It is, therefore, necessary that all cases be promptly reported and put under control.

In some communities the physicians have been neglectful, while in others the laity have been the offenders. Let me say to you, that the physician who wilfully or carelessly fails to promptly report all cases of infectious disease is not worthy of your confidence, is a source of real danger to his community, is a disgrace to his profession, and public sentiment should force him to change his tactics. Fortunately there are but few such men in the practice of medicine.

Let us then cooperate to the utmost with our local boards of health, and try to make them more active and efficient. Where the local boards are unorganized or inefficient, let us insist upon proper action to secure their services. Let us recognize the advisability and necessity for their rules and regulations even though these may cause us, as individuals, some annoyance. Let us inform all and sundry of the correctness of public health regulations and the .protection afforded to the people by them. Let us use our influence as an organization and as individuals to strengthen the laws and their administration. Let each person present go forth as a missionary to his home surroundings to carry the gospel of good health.

Many of the communicable diseases have been much lessened in frequency, and some almost completely abolished, by the action of public health officials in conjunction with the medical profession. It is not too much to say that smallpox, yellow fever, malaria, typhoid fever, tuberculosis, measles, mumps, whooping cough, scarlet fever, diphtheria, and all other infectious diseases can be wholly abolished. We should hasten this day by causing proper laws to be passed and by upholding the actions of those who have charge of the enforcement of these laws.

Public health problems are no longer problems of the medical profession alone. They are problems of the whole citizenry, and it is only by recognition of this fact that much more progress in the control of disease may be accomplished. This is largely an economic and political problem and should be dealt with as such. Public health is to a large extent as purchasable a problem as are good roads, a fact that should be more completely recognized.

Another factor in public health work is the control of proper food, milk, and water supplies. These properly should fall under the direction of our public health officials, but do not in this state. Too often it is the case that local influences or limitations will cause a certain amount of neglect of these factors. Food, milk, and water inspection is vital under our modern conditions of civilization and it should be the ideal of every person interested in production and distribution of food supplies of all kinds to make sure that they are pure and wholesome and safe for consumption.

I will not go into a prolonged discussion of the third subdivision of legislation, vital statistics. Suffice it to say that the system of vital statistics is simply bookkeeping on humanity. Properly completed vital statistics will give a balance sheet on the population. They will show the ratio of births to deaths, will give correct information as to the causes of death, will call attention to the necessity for public and personal prophylaxis, and will bring to light other matters of interest in living conditions.

There are certain laws that place a burden upon the medical profession, but these laws are deferred to by the profession with good grace and these burdens willingly borne as they are mostly for the good of the people. The reports of contagious diseases, and of vital statistics are at times rather burdensome, though necessary. The Harrison Narcotic Act is a burden, but when it is well enforced it is a law of wonderful value. The man who was in practice in 1915 when this Act became a law was bound to realize its timeliness. Certain interpretations of this law and certain acts of enforcement officers have placed an undue burden upon the profession, but we know that these burdens must be borne for the good of humanity, and that the problems of regulations and enforcement will ultimately be satisfactorily solved. The Prohibition laws, both state and national, fall into the same category.

The medical profession as individuals or as organizations are not empowered to enforce medical laws of any kind, though the laity seems to be under the impression that they are. Not long ago an article appeared in our state newspapers stating that a district attorney had written the officers of the Nebraska State Medical Association and the American Medical Association asking that they take steps for the control of a certain irregular practitioner. This attorney was laboring under a mis-apprehension; the medical profession is under no more obligations to secure punishment of violations of the medical laws than it is to act in violations of any other laws. These come within the duties of the law enforcement officers and to secure enforcement of any law it is merely necessary to arouse public sentiment. Nor can any medical practitioner legally quarantine or isolate any person; he can merely report the necessity for such action to the properly authorized officers, who are legally empowered to act on such notification.

A word as to the attitude of the medical profession and the laity in matters of medical legislation. Attention was called to the fact that the medical profession had heretofore been the active factor in securing suitable and progressive medical legislation. This, because of the fact that the profession has been in a position to understand the necessity for such legislation better than other elements of the population. The general public is now in a position to obtain knowledge of these facts, and this knowledge should lift the burden of this work from the profession. It is true that this knowledge has not been disseminated as rapidly as has been possible, but it is my opinion that it will be in the future. Certainly the organized medical profession will soon take active steps to put all possible knowledge of medical advance at the disposal of all interested parties. There is some difference of opinion as to how this should be done, but surely the old haphazard, individual method of disseminating such information will soon be abandoned, and when it is both the profession and the public will be the great gainers.

Another reason that the public should take an active interest in medical legislation is that they are the ones who profit thereby. As has been shown, properly enforced medical laws and regulations lessen the amount of sickness and to that extent limit the amount of work a doctor has to do. Any man who has been actively in the practice of medicine for the past twenty-five years can tell you that his practice is wholly different now from what it was at that time. No more do we have the extensive epidemics of contagious and infectious diseases that furnished the bulk of our practice then. Serious epidemics of typhoid fever, dysentery, the summer complaints of children, diphtheria, scarlet fever, and other infections, are no longer common in progressive communities. When such diseases occur they are put under immediate control in such a manner that the doctor no longer derives much income from them. Even tuberculosis is less than fifty per cent as common as it was a generation ago.

In view of these facts it is but just that the public assume the burden of enactment and enforcement of medical laws for their own defense. There is no danger that the profession will lose interest in this work, but it would be well that they should be permitted to drop the leading role in it. This conference should appoint a committee to take an active part in such legislation as will be introduced in the next legislature. I am not empowered to speak for any individual or any organization, but I feel sure that the Committee on Medical Legislation of the Nebraska State Medical Association would welcome such a committee to cooperate with it and I also feel sure that such a committee could accomplish much in value in both a legislative and educational way.

NASAL SINUS AND EAR INFECTIONS IN CHILDREN AND INFANTS*

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The development of the nasal accessory sinuses and the mastoid and the types of infection which may involve these structures during the growing period of the child play a much more important part in the future health and happiness of that child than is generally recognized. Some of the nasal sinuses and the middle ear and mastoid antrum are subject to infection at almost any age and these infections may produce both local and constitutional symptoms.

The maxillary sinuses or antra of Highmore are present at birth though small and are placed more internal to, than below, the orbit. The ethmoid is but a faint depression in the bone at birth but begins to develop by the fourth month and is fully developed by the sixteenth year. The frontal sinuses are not found at birth but begin to develop between the first and second year and up to the sixth or seventh year are not much larger than a pea so that frontal sinus infection before the seventh year would be rare.

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*Read before the Wayne, Dixon, Dakota, Thurston and Cedar Counties Medical Society, September, 1928.

The mastoid cells are not developed at birth but develop during the growth of the child and are not supposed to be fully developed until puberty. The mastoid antrum, however, is well developed at birth and easily infected from the middle ear.

For some years medical men have recognized the importance of head infection, i. e., teeth, tonsils, nasal sinuses and ear, in the production of general infections. Among the most common constitutional disturbances traced to foci in the head are rheumatism in its various forms, arthritis, kidney, heart and chest lesions. It was only in more recent years, however, that similar general infections were connected with head infections in children and infants. Naturally, pediatricians were prominent in developing this work and they found it necessary to work hand in hand with the ear, nose and throat specialists. It is interesting to note that middle western men were the most prominent in developing this research work and notably among these in pediatrics were Bifield, then at Iowa City, and Marriott and Jeans of St. Louis. In otolaryngology, Dean of Iowa City and, Lyman and Alden of St. Louis were prominent although many others have contributed extensively. Dean and Bifield emphasized that there was a direct connection between nasal sinus infection and arthritis in children and also chronic bronchitis and asthma in children. About three years ago Marriott brought out the relationship between middle ear and mastoid infections and the acute gastro-intestinal disturbance of children known as cholera infantum. Jeans, at Iowa City at the same time, called attention to a similar relationship between nasal sinus infections and acute gastro-intestinal disturbances. Both investigators established this relationship through necropsies. In deaths from cholera infantum the only pathology found post mortem was pus in the middle ear or sinuses. This led to a more careful investigation of the ear and sinuses in acute gastro-intestinal disturbances, and the early drainage of pus when found led to rapid improvement in the general conditions. The general symptoms in cholera infantum are fever, diarrhea, dehydration, rapid loss of weight and appearance of intoxication. Usually there are from eight to twenty foul smelling stools per day, rapid loss of weight and emaciation. Fluids are not retained well and if retained cause more stools. Change of diet does no good. In many of these cases where pus was found in the mastoids and drainage established there was almost immediate improvement in the above symptoms.

In looking for foci of infection in children and infants the tonsils and adenoids are not to be disregarded but must be considered as one of the number of possible causes. We will not touch upon the tonsils here as I know you are all familiar with this subject. It is a well known fact, however, that many children will develop very acute pharyngitis with symptoms of tonsillitis after the tonsils have been removed. These cases may develop rheumatism and other constitutional disturbances. In our experience these cases of recurrent attacks of acute pharyngitis are, as a rule, due to a post-nasal discharge which is a symptom of nasal sinus infection. I believe that the specialists have been too prone to take out tonsils and adenoids without a careful nasal and ear examination and careful history of the complaint.

Symptoms of Sinus and Middle Ear Infections
In children and infants both the local and constitutional symptoms may differ from similar infections in adults.

The usual symptoms of mastoid and middle ear infections are pain either in the ear or over the mastoid area, a red and bulging drum or a drum which sags and is not red: the child is usually very restless, moves the head constantly and puts the hand up to the ear. All of these symptoms may be wanting in cases of masked mastoiditis. We and other observers have found pus in the middle ear when there was apparently no bulging or redness of the drum and pus has been found in the mastoid when there were no local mastoid or drum findings. In these cases the ear drum or mastoid was opened because of lack of other evidence in grave cases of cholera infantum. In these cases I suppose the mastoid symptoms could be said to be entirely constitutional.

In nasal sinus infections there is usually a nasal discharge, headache, post nasal discharge and frequently a chronic cough which in my experience is usually a hacking, unproductive cough. The constitutional symptoms of nasal sinus infection may be chronic or acute; the chronic would include chronic bronchitis and asthma, arthritis, etc. The acute symptoms or complications would include the gastro-intestinal disturbances referred to before.

Diagnosis: Middle ear involvement is usually diagnosed by a bulging or sagging, red drum. Mastoid infections would include these symptoms and further there would probably be tenderness and swelling over the mastoid and an increase in the white blood count. X-rays are taken if possible. In the masked mastoiditis the diagnosis must be made by elimination, remembering that a large number of cholera infantum cases have been found due to middle ear and mastoid infection. In nasal sinus cases a diagnosis can be made from the history of discharge from the nose over a long period of time; headaches and recurrent colds. The x-ray is very valuable in sinus cases. Differential diagnosis must be kept in mind in sinus infection. A few days ago we removed a pearl button from the right nostril of a child of four years. He came in for a nasal sinus operation. The tonsils and adenoids had been removed to stop a chronic cold. However the history was quite clear, a one-sided foul smelling discharge which persisted for the past two years. The removal of the button will undoubtedly clear up this sinus trouble.

Treatment: In frank middle ear involvement a paracentesis of the drum is indicated early and in grave gastro-intestinal cases which do not improve after a paracentesis the mastoid should be opened. In my opinion in critical cases of cholera infantum if there is no improvement in 24 hours after the drum is opened the mastoid should be opened. This can be done very quickly with no anesthetic if indicated and with practically no shock to the child. In sinus infection in children the treatment is always conservative if possible. In the chronic cases general treatment, sunshine, diet, codliver oil and iron are very beneficial. If the x-ray showed a blurred antrum, irrigation is simple and a few irrigations may clear up the condition. If it does not clear up, a conservative intra-nasal operation may be necessary even in young children. We have had some very striking results in these cases.

There is some ground to the popular belief that sinus cases do not get well following operation. Many of these cases do have a chronic discharge with frequent colds and recurrences due to a thickening of the mucous membrane lining these sinus cavities. It is very hard to restore this membrane to normal with a normal functioning ciliated epithelium following a prolonged infection. The conservative treatment is particularly efficacious in acute cases. Ephedrine used either as a spray or dropped in the nose every few hours will keep the membranes shrunk down and allow drainage from the sinuses. This can be followed with 5% lunosol solution. Steam inhalations are of value in infants and we think probably compound tincture of benzoin, one dram to the pint of water, used as inhalation is as good as anything.

Conclusion: In conclusion we have hoped to emphasize the fact that (1st) nasal sinus and middle ear infections in children may cause grave constitutional disturbances both of a chronic and acute form; that there is definite proven connection between these infections and the acute gastrointestinal disturbances known as cholera infantum and that many of these cases improve rapidly after drainage of the pus. (2) That the middle ear and mastoid infections in these cases of cholera infantum are often masked and the diagnosis must be made by elimination. Autopsies and clinical findings however have proven the connection between these infections. (3) That children and infants do develop nasal sinus infections and that persistent nasal discharge, particularly a discharge lasting during the summer often accompanied by a hacking cough or chronic bronchitis, is as a rule due to nasal sinus infection. (4) That the local symptoms and general condition of these little patients as a rule improves greatly following treatment of the sinuses.

ROENTGEN RAY X-RAY EXAMINATION, GASTRO-INTESTINAL TRACT*

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In presenting a paper upon the x-ray examination of the gastro-intestinal tract, it is not with the idea of presenting anything new in the way of method or technic, but to stress certain known points in connection with the examination, and to indicate what may reasonably be expected in a diagnostic way from a procedure of this sort, if proper technic is observed and followed throughout.

Most roentgenologist, like other people, are prone to fall into the habit of doing things the easiest way possible, and particularly the busy roentgenologist finding himself pressed fails to take time for the proper preparation of the patient, or to spend the time in the fluoroscopic room to allow for the proper accommodation of the eyes and a thorough fluoroscopic examination, or neglect the fluoroscopic examination in a great measure, relying upon films for their examination and diagnosis.

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*Read before the Third Councilor District Medical Society meeting, Falls City, November 22, 1928.

The referring doctor is to be blamed many times for the hurried and oftentimes incomplete examination, because of his limited knowledge of what an x-ray examination of the gastro-intestinal tract presupposes, and of the time required to properly conduct the examination. It is not unusual to have some physician call at eleven, twelve, or one o'clock and say he has a patient in his ofice he would like to send right over for a G. I. and as the patient cannot be away from his office or home or for some other reason, will we rush him right through and get the report back as quickly as possible. The roentgenologist desiring to be accommodating, and perhaps needing the business, reluctantly acquiesces and starts the hurried quasi-examination. Many times it is necessary to recheck and to refill or to observe the patient for two, three or four days following the administration of an opaque meal before complete conclusions may be made. No examination should be hurried. Any thing that is worth doing is worth doing well. And with this idea in mind we would like to detail what to our mind is a worth while procedure in the preparation of the patient and the conducting of a roentgenological gastro-intestinal examination.

Given a patient for a gastro-intestinal examination, if before ten o'clock and he has had little or no breakfast, the preparation and examination may proceed at once. If later than ten-thirty or eleven a. m. he had best be instructed to take an enema that evening if the bowels have not moved during the day and return the next morning. No laxative is given before the examination or until it is completed. If given before, it has a tendency to load the bowel with gas. If given during the time of the examination it produces a hyperperistalsis and would speed up the travel of the meal and perhaps completely empty the colon for the twenty-four hour observation.

In the laboratory the patient is given a plain enema, which is given slowly so as to completely fill the colon. At its completion he is given one cc pituitrin hypodermically and instructed to retain the enema as long as possible which as a rule is not very long on account of the pituitrin given. The necessity of an adjacent toilet is many times quite obvious where this procedure is followed. This unloads the colon not only of fecal material but of gas which is quite essential, particularly in the hepatic flexure or region of the gallbladder.

Gallbladder examination should be a part of the routine. Three pictures of different density are now taken of this organ. The reason for the different density is that findings may show on the light film, that would not appear on the darker one, or vice versa.

The fluoroscopic examination follows, and in the hands of many, I believe, this is a much neglected part of the procedure, due to the fact that men dislike to expose themselves to the x-rays as needs must be in this part of the examination. Yet from the standpoint of information obtained from this as compared with films alone, the fluoroscopic examination is worth about 90% and films about 10%.

Plenty of time must be given for the eyes to accommodate; ten to fifteen minutes on dark days and fifteen to twenty minutes on light days. This time can be cut in half by the wearing of dark glasses for a time before going into the fluoroscopic room. If this point is observed, much less exposure of the patient as well as the operator will be required. Actual exposure time should seldom require more than one and certainly not more than two minutes.

The patient stands facing the operator and a preliminary fluoroscopic examination of the chest is made. He is then turned slightly to the left and is given the meal to drink. It is observed passing down the esophagus to the stomach. Any irregularities or constriction of the esophagus may be noted. A slight depression due to pressure of the arch of the aorta is normal; likewise there is a narrowing at its entrance into the cardiac end of the stomach. A second observation is made of the entire esophagus toward the conclusion of this examination to observe whether there might be any retention suggestive of a diverticulum. As the stomach fills the size, shape and position is noted. Its borders are scanned for any niches or irregularities. Should any appear, and they do in most cases, attempts by pressure and change of position of the patient, are made to make these irregularities fill out. This is the valuable part of the fluoroscopic examination for what would appear to be a filling defect on a film can be seen to be made to fill by proper manipulation. The tonicity, hypertonicity or atony of the stomach is noted. The peristaltic action may be indicated as 1-2-3-4 or 5 plus depending upon the number of peristalic waves noted at any single observation.

If the temperature of the meal is low a temporary pylorospasm may be produced and the stomach will not empty readily; or if there is a ptosis or atonic stomach, manipulation may be required to force the meal into the duodenum.

Any filling defects or deformity of the stomach or pylorospasm being noted, we pass to the first portion of the duodenum commonly called the cap, and it is here difficulty is many times encountered in obtaining a normal cap even though no pathology exists.

This is where the fluoroscopic examination is of value as the duodenal cap remains filled only a short time. It is true that serial films, if sufficient number are taken, may disclose a cap normal in outline, but most of them will be only partially filled, or present what may appear to be a filling defect, where if during the fluoroscopic examination pressure is made over the second portion of the duodenum and upward and outward over the stomach at the same time a normal cap may be obtained, when it might be missed on the films without the proper positioning or pressure being made at the time of exposure. If serial films are obtained it must be borne in mind that one film showing a normal cap will negative any number of films showing a deformity.

If a deformity is observed, note should be made as to its location, size, and character of the deformity or point of tenderness, all of which will assist in determining whether the same is due to an ulcer, external pressure or new growth.

Following this fluoroscopic examination two or four films are made more as a matter of record, and having something to show the referring physician, rather than gaining much additional information. The patient is instructed to eat a light lunch within the next hour and report for further observation in six hours.

The purpose of the six hours is to observe the emptying time of the stomach; for while normal stomachs will empty in three to four hours it is not regarded as pathological unless there is an appreciable residue at the end of six hours. The progress of the meal is noted at this time, and is usually found in the ascending or transverse colon. If there is much variation from this note is made it being an indication of either a hyperperistalsis or atonic condition as the case may be. Some time the head of the meal is found at the ileo-cecal valve, suggestive of a kink or an obstruction at this point.

Following this the patient is instructed to eat the usual evening meal and breakfast the next morning unless we desire to refill and recheck the stomach.

The twenty-four hour examination should find the meal distributed throughout the colon, sigmoid and rectum. Occasionally the large bowel is filled fairly well but usually this is not the case.

If it is filled, note is made of the position, whether it appears spastic, or atonic, or if the haustra are normal. By making pressure on the different parts its mobility and the presence or absence of adhesions is determined.

The cecum should be fairly movable and if the appendix is patent it should be filled. The appendix is not always visualized even though it be filled. It may be post-cecal and be attached by a short mesentery, making it impossible to float it out where it can be seen. If observed note is made of its size, shape, mobility, evidence of adhesions and point of tenderness. Here again the fluoroscope is of inestamible value and complete accommodation of the eyes must be had before attempting the examination.

The presence or absence of any irregularities of the cecum or ascending colon is noted. If marked angulation at the hepatic flexure is observed the presence or absence of adhesions is determined. In most cases there is some ptosis of the colon and the stomach as well, but we are not so much concerned about their location as we are as to whether they function. If they empty on time, their motility is regarded as normal, irrespective of their location. If there is suspicion of diverticula, subsequent examinations are made after the colon has time to empty.

Rarely does one find a colon filled sufficiently to justify a positive conclusion and the opaque enema must be resorted to. This is given under the fluoroscopic screen and in the absence of obstruction the colon fills throughout in two or three minutes and then can be studied in its entirety.

I believe the opaque enema offers the only method of comprehensive study of this organ from a roentgenological standpoint; the dilated cecum and ascending colon as a result of angulation at the hepatic flexure, or the latter part of the transverse colon due to acute angulation of the splenic flexure. Also redundant dilated sigmoid spasticity or atonicity as well as partial obstructions due to adhesions or new growths, are best studied in this manner.

In summing up the case the gallbladder films are studied. With present day technique about 85% of gallstones are visualized. The gallbladder dye affords much additional information relative to this organ. Strict attention must be paid to the preparation of the patient in order to do satisfactory gallbladder radiography.

In rendering the report to the clinician the findings as detailed above are given together with the conclusions as gleaned from the roentgenologic examination.

No detailed history is taken, unless requested, as it is presumed the clinician has done this and has already arrived at whatever conclusion a history might afford, and now seeking an opinion based upon roentgenologic findings. I realize that wrong conclusions might sometimes be avoided if a complete history, together with blood, urinary and other laboratory findings accompanied the patient to the x-ray laboratory, but on the other hand I believe an opinion based solely on x-ray findings is of more value to the clinician than one that might be biased by a history, etc. After the completion of the case and receipt of the report by the referring physician a conference by telephone or otherwise is always in order and of value to both the referring physician and the roentgenologist and patient as well.

To summarize:

1. Proper preparation of the patient is of vital importance.

2. Hurried or incomplete examination should not be attempted. Better do it right or leave it undone. Slip shod examinations are unfair to the patient and in time cause the referring physician to lose respect for and doubt the value of the x-ray as a diagnostic aid in these cases.

3. Fluoroscopic examination is all important in gastrointestinal examinations and sufficient time should be allowed for proper accommodation of the eyes. A preliminary examination of the chest should be made.

4. Opaque enemas are necessary for a complete study of the colon and should be routine.

5. A discussion of the x-ray findings and their interpretation with the clinician will be of value to all concerned.

AN OUTLINE OF THE DIAGNOSIS AND TREATMENT OF TOXIC GOITER

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The syndrome which is called toxic goiter, hyperthyroidism, Basedo's disease, Graves' disease, exophthalmic goiter when all the characteristic manifestations are present, offers a picture which is unmistakable.

The diagnostician cannot well go wrong when he views a subject affected with tachycardia, tremor, protusion of the eyes, profuse sweating, sleeplessness, weakness, air hunger, rapid loss of weight associated with a tremendous appetite, gastro-intestinal disturbance, general malaise and more or less enlargement of the neck.

But the picture is not always complete, many of the manifestations are shown in other conditions. The clinician not infrequently treats individuals for tuberculosis, diabetes, various heart lesions, gastro-intestinal and pelvic disturbance, nervous breakdown, when the illness is caused by excessive secretion of the thyroid gland. It has been demonstrated that hyperactivity of the thyroid will produce these symptoms, the factor or combination of factors which stimulate the thyroid to discharge its stored iodine have not been isolated.

It has been observed that shock, a serious illness, a profound mental disturbance, focal infection and residence within what is termed a goiter district, appear to be contributing causes in some individuals to produce what one writer has called diarrhoea of the thyoid.

The condition is more common in women than men. It is thought that the disturbance of the endocrine balance at puberty, during pregnancy and the menopause favors the increased percentage in the female.

No age period is immune but the condition is more common during adolescence and late maturity.

The associated tumor may be cystic or in the form of an adenoma or, more commonly, a uniform hypertrophy due to increased cell formation incident to the abnormal demand placed upon the gland.

The condition may be insidious; it is not infrequent to see an individual in whom the condition may be traced back over a period of many years or it may be acute and a period of a few weeks may bridge the time between good health and total invalidism.

During and since the war observers have noted a manifestation which has been called thyroid neuraesthenia or pseudo-hyperthyroidism. It has been too frequently diagnosed as toxic goiter. Many of these individuals have gone through the operating room, have been treated with the roentgen ray and radium and have taken quantities of iodine to relieve their disability. These have furnished the surgeon with a reduction in his mortality rate, the radiologist with an increased percentage in his improved list and have encouraged the physician in the efficacy of rest and medicinal measures.

Pseudo-hyperthyroidism has a fluctuating metabolic rate, rarely high at any time. They may have tachycardia, tremor, weakness and air hunger with loss of weight, occasionally with some enlargement of the neck, which may temporarily confuse the clinician but observation and the metabolic index will clear up the diagnosis.

Since the taking of the metabolic index has come into general use and its accuracy established as an office measure as well as after hospitalization the diagnosis and differential diagnosis have been greatly simplified both as to the presence or absence and as to the intensity of the disorder as well.

We who reside in a district in which toxic thyroid is what might be termed semi-endemic should be doubly on the alert to recognize the condition as it is rather unusual to see it in the highly developed form so common in the districts around the Great Lakes. It is uncommon to see a case with an index of over plus seventy but the borderline cases and those registering a somewhat lower index are comparatively numerous.

In these cases the index is constant, increasing with the severity of the symptoms and decreasing with their improvement.

The psychological element is of extreme importance to all who are interested in the study and care of those suffering from thyroid unbalance. Irritability and apprehension, also a morbid view of their invironment, are among the early mental symptoms seen in these patients. Recognition is essential to the diagnostician and vital to the therapist. In short, mental rest and confidence should be early established and maintained as far as possible throughout the course of the illness.

The rigorous eradication of all foci of infection is of great value regardless of the method of therapy contemplated. One cannot say that focal infection is a direct cause of the trouble but it certainly retards recovery.

The direct treatment of toxic thyroid is empirical. Until the definite etiology is established the focus of the attack is the reduction of thyroid secretion. It naturally follows that the word cure, when used in this treatment, should mean a permanent interruption and relief from the train of symptoms caused by the excessive secretion of the gland. The time element of relief becomes the true basis of the cure of the condition. Should a patient remain free from symptoms with a metabolic rate within normal limits for a period of one year they are usually considered cured.

Three broad lines of treatment are recognized as accomplishing the results desired, medical, surgical and radiological. They should be recognized as supplimentary rather than competitive, as none can lay claims to one hundred per cent result. The good of the individual patient is the primary consideration and not the glorification of the method used.

In many, two of the methods are used, in some, all three, either medical, radiological and surgical or medical, surgical and radiological.

The medical treatment consists in giving the patient mental and physiological rest. The iodine treatment has been found to be only a temporary reducer of the rate and should not be administered over any considerable time. It is pretty generally accepted that patients having a plus thirty or under, do well and recover under this rational treatment. However, it is difficult to evaluate the treatment on account of the dearth of percentage records of cure.

The surgical method seeks to restrict the excessive secretion by removal of an estimated amount of the gland. Many operations have been devised in the past twenty years for producing the result but in the last few years most have been discarded in favor of the subtotal operation. Great skill and experience are required to estimate the amount to remove to produce permanent relief and not secure the development of myxedema. The records of three large goiter clinics show cure and improvement between seventy and eighty per cent of cases operated, with a mortality rate of about one per cent. In the surgical treatment outside these highly skilled and specialized centers the percentage of cures is hard to secure but the mortality rate is estimated between ten and twenty per cent. Toxic adenomas of large size where pressure symptoms are marked are considered surgical. The patient secures in addition to his relief, the removal of an unsightly tumor.

The roentgen therapy has only prominently come into use in the past ten years. It offers a control of the hyperactivity of the gland through the production of atrophy. By its use the operator may graduate its application to the manifestations in each case and thereby permitting the general organism to adjust itself to the change without shock or other unpleasant accidents. During the treatment, in a large percentage of cases, the patient's usual activities are only slightly curtailed as they progress from a condition of invalidism to useful members of their communities. The results of this treatment at the present writing, as computed by a neutral observer as to cure, improvement and absence of relapse, at least equal those presented by any other method.

The course of treatment as applied under the present standardized technique usually covers a period of three to six months or from six to twelve applications. In the average case a marked diminution in the pulse rate, a gain in body weight is observed at the end of six weeks. Progressively the manifestations of the condition subside until the metabolic rate drops to within normal limits. In the year following the end of the treatment the patient is advised to have several rates run as in other forms of treatment. In those cases having a hypertrophy of the gland from hyperplasia a reduction to normal is the rule. In cases of toxic adenoma or where the tumor was present previous to the development of the toxicosis, little change is noted as to size. In cases of exophthalmus the reduction of the eye manifestation is last to disappear. In women near the menopause where the condition is resistant, a few applications over the pelvis often is of assistance. Treatments over the suprarenal bodies is reported to assist in otherwise stubborn cases.

It has not been seven years since I treated my first case of toxic goiter. At that time and for some time afterward no metabolic instrument was available. It was necessary to judge the condition and results purely from the clinical standpoint. Fortunately it has been possible to secure follow up data on most of them. In assembling the records of cases treated, those treated during the present year are not included. The percentage cured is seventy-five per cent, improved ten per cent, no follow up record ten per cent, discontinuing treatment five per cent. Of these one man discontinued treatment after the third application, was operated and at the end of six months developed a relapse. One case, a man who was a poor surgical risk, after six applications discontinued treatment although he had shown considerable improvement, later secured an operation and died. Ten per cent of cases cured had been previously operated and developed recurrance.

Reports of cure in this condition as a result of the use of the roentgen ray range from sixty-five to eighty per cent. The percentage of cure as reported by radiologists is affected adversely from the reason that the inoperable cases are referred to them for treatment.

When a physician refers a patient to the radiologist for treatment in this condition it should not be considered that his care and responsibility is terminated. It is imperative that the radiologist insists on the patient keeping in close touch with his physician during the interval between treatments as well as in the follow up period, after the treatments have been discontinued. By this procedure a healthful cooperation is established between the radiologist and the referring physician and develops a state of confidence in the patient which is of tremendous importance during his convalescence.

In conclusion I would like to impress the fact that there are too many patients registered in the improved and not improved lists regardless of the method used.

That the spirit of competition does not promote a state of mind which works out to the best interests of the patient.

Every physician knows the type of cases which respond best to the medicinal treatment.

Every surgeon, if he analyzes his cases, knows the type of the condition in which his highest percentage of operative success rests, as well as the type in which the greatest mortality occurs.

Every radiologist knows the form of the disturbance which responds best to his treatment, as well as the form in which he has the highest percentage of failures.

This being true, it would only follow that rational and intelligent cooperation would produce a material increase in the permanently cured, with a corresponding reduction in the mortality rate.

It would appear from the results of the various conferences, or I might better say controversies, between surgeons and radiologists, that for the present, the diagnosis and segregations of the various forms of the disturbance must rest largely in the hands of the general practitioners.

Father: "I just paid the doctor another ten dollars on his bill."

Mother: "Oh, goodie; two more payments and the baby's ours."

WHAT CAN THE GENERAL PRACTITIONER DO FOR RECTAL EMERGENCIES?*

HAL SMITH, M. D.,
Franklin, Nebr.

It will be my earnest endeavor to give a few useful points in treating the more common anorectal ailments.

First, let us take up the proper method of giving enemas. Since the darkest ages of antiquity man has employed all sorts of irrigating solutions, even in the animal world long necked birds have often been observed dislodging impactions, by forcing water into the rectum through the beak. There are so many fields of usefulness for properly administered enemas, that it seems a pity the over-enthusiasm on the part of some physicians, has carried the flushing of the lower bowel to a ridiculous extreme. I think most general practitioners at least will bear me out in the fact that the experience with different nurses from various hospitals, when assuming a case, is that she will usually say, "Doctor, have you a long colon tube?" And when you ask her what she wants with it she will usually look very much amazed and say: "Why, I want to give a high enema". When you ask about how high, she will reply, "Oh, way up into the colon". After as much has been written and said on high and low enemas, especially after hundreds of skiagrams have been taken with a barium filled colon with tube inserted presumably into the colon, to find it innocently coiled up in the ampulla of the rectum, with the distal end trying vainly to gain its exit, one would think all medical men and all nurses understood. And yet, with very few exceptions the nurse will say, "Why, Dr. So and So, a famous surgeon in such and such a renowned hospital, told me so".

One would think that these questions had been settled, when radiographic studies have proven conclusively that a pint of opaque enemas will pass from the rectum to the cecum in one minute, and this is certainly as high as one usually desires. It is not your colon tube that goes into the colon, it is the fluid and no one has ever been able to pass a colon tube past the sigmoid flexure, without the aid of a sigmoidoscope or proctoscope and then it is exceedingly difficult. The average colon tube has an aperture at the distal end, whose rim, even though of rubber, is sufficient to impinge on diseased and ulcerated tissue and further traumatise the anal canal. All this can be avoided by using an ordinary catheter 20 to 25 French which has a conical tip with the aperture on the side and is soft and flexible and conforms readily to the curvature of the anal canal, its outer end connecting readily with the tip of any ordinary hot water bottle. One cannot be too emphatic in deprecating the use of hard rubber and glass tips as well as the rectal tube, for I have seen case after case both in children and adults where there were lacerations followed by ulceration and infection and very frequently the cause of one of the most painful ailments of the rectum, a fissure.

And frequently the rubber or glass tip breaks off and becomes lodged in the rectum, sometimes requiring an operation to remove.

About three of the most common ingredients used in enemas and above all the ones that should not be used, especially when you have any reason to suspect an irritation or raw surface in the rectum, are soap, glycerin and turpentine. Just remember the anal canal is lined with mucous membrane, the same as the eye, nose, etc. Who would think of putting any of these agents in an eye? I have made numerous experiments proctoscopically, following an enema of the time honored soap suds, and it always presents an angry red appearance, and many patients have had a diagnosis of proctitis after the same has been given.

Try it yourself and see the difference, giving a 1% solution of sodium bicarbonate at about 65 to 70 degrees Fahr. and then give an enema of soap suds; in the former the mucous membrane will retain its pearly pink hue, while the latter will present an angry red.

The Sims' position is best for giving enemas ordinarily, as well as for examination and treatment. In the lithotomy position there is too much tendency to strain and force back the fluid.

In cases of fecal impaction, instead of using oils, glycerin and ox gall, use one part of peroxide of hydrogen to two or three parts of tepid water; it is far more efficacious and will disintegrate practically any impaction.

Instead of using turpentine to expel flatus, you will get far better results, from the gentle, astringent effect of a 6% solution of powdered alum.

It has become a fad in some localities to have the patients come month after month and year after year to have, as it were, their colons laundered. I have heard many physicians say, "Why,

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*Read before the Republican Valley and Fourth Councilor District Medical Society, Hastings, October 25, 1928.

I use gallons of water and I get enormous quantities of mucous every day"—which is only an evidence of nature's protest against an intestinal insult. Evidently they are ignorant of the fact that they are continually producing a hyperemia and removing all the mucous, which is nature's normal intestinal lubricant.

Remember, a nose will drip, and an eye will run when irritated, just as will the most important canal in the world, (not as one of my old lady patients called it, the parliamentary canal), but the alimentary.

There is a legitimate field for enemas in the treatment of bacterial and parasitic conditions, as the infusion of quassia chips, in the common malady of seat or thread worms, also ulcerative colitis, amoebic dysentery and proctitis, the latter with a solution of a drachm of F. E. Krameria to a pint and a half of water. Astringent enemas in hemorrhage, such as tannic acid or a 1% solution of ichthyol, and in some cases of polyposis a 6% enema of salicylic acid, has produced a tanning effect on the pedicles of small polyps causing them to atrophy and be expelled.

Often, in postoperative cases, the time honored Murphy drip, saline, alkaline, or dextrose enemas are of great value in treating acidosis. Also the Bismuth or Barium opaque enemas for colonic diagnosis; but I can see no good therapeutic reason for dumping all the kitchen necessities, such as milk, molasses and soap into the external opening of this defenseless canal.

Very few patients ever consult a physician for rectal trouble until the pain becomes unbearable, also very few physicians ever look at or examine a rectum; if he can occupy the patient's time by looking down his throat, why I do not know. Doesn't it look as plausible that you could have an infected crypt, just as easy as an infected tonsil? Or an ulcerative proctitis just as easy as a peri-apical abscess? Or a perirectal infection of any sort just as much as an infected gallbladder or appendix?

Usually the examination is very perfunctory, merely inserting an unanointed finger. No one can diagnose piles, with a finger; anyone so stating is not telling the truth. You can only diagnose these through an anoscope or proctoscope.

The case most frequently consulting a physician is for a prolapsed thrombosed hemorrhoid. This is very painful, so do not traumatize by trying to return it.

Merely inject 1% solution of novocain and cut if off; you need not tie it as it is unnecessary. To keep in step with our eye, ear, nose and throat brothers at the other end of this famous canal, we, too, insist in taking them out in their capsule.

Be very careful of the patient past middle life coming to you stating, "Doctor, I have piles, with bleeding at stool". It is only too often an adenoma or an adeno-carcinoma—this is one malady that can usually be diagnosed with the finger, usually in the lower first or second inch and rarely above three inches, frequently at the first or second Huston valve, by having the patient stand and strain, you will almost invariably detect it with a well lubricated finger. Of course, after these cases become advanced, they practically fill the rectum, and anyone can feel them.

The most frequent cause of hemorrhage is either an internal pile or a fissure. The latter occurs in the posterior commissure in about 75% of the cases, rarely in the anterior commissure, the latter more common in the female than the male.

Remember a fissure is the most painful ailment of the rectum and NEVER try to force even a digital examination, let alone an instrumental one, as the pain is so excruciating that the patient may leave the office never to return and you cannot blame him; also remember in preparing these patients for an operation never give a saline, but give an oil, as the former increases the pain.

These can either be incised or excised, but whatever method, unless the cut is carried well out for a half inch or more in the perianal skin, to institute drainage, they will recur.

Likewise, never use a bivalve speculum or any other instrument to dilate, merely use the thumbs, then you can feel your way and go slowly and not tear and mutilate the sphincters, as there are numerous cases of incontinence produced by forcible instrumental dilatation.

A hemorrhage of the rectum is very awkward to get at postoperative or otherwise; if you are unable to find and clamp the offending vessel, use a strip of gauze with a double string attached to the center, the same as making a tampon, insert this crossways in the lower ampulla of the rectum leaving the strings outside, where you can lay another pad parallel with this and tie the cords around and give it whatever degree of tightness you desire.

In country practice we frequently have cases of impalement; throwing the pitchfork down the side of the stack and then sliding down thoughtlessly and becoming impaled on the handle thereof. These accidents frequently puncture the bladder, or peritoneal cavity and are very often fatal. The examination of these must be very carefully done with a sigmoidoscope or a proctoscope.

The treatments of hemorrhoids are legion—there are so many methods, used successfully by so many men, that it would be impossible to say which is the latest and best, for most any method handled by men who become expert in this line of work, usually terminates in recovery.

Gant, Hirschamn and the late J. Rawson Pennington preferred the needle or ligature method, others get good results with the clamp and cautery. I have here a set of clamps perfected by Dr. W. H. Miles of London, whose clinics I had the pleasure of attending last year, and who, without doubt, today, is conceded to be the most outstanding proctologist in the world. His method is to evert the pile area, pick up all the pile mass with these clamps in three sections, instead of dividing it into quadrants, cutting the skin externally up to the pectinate line, and then tying the pile mass with a number 17 plaited ligature, snugly, leaving the mass to slough off. He has used this method for over thirty years with perfect results. One of the main features is it leaves no skin tabs, but a smooth perianal surface once healed.

P. Lockhart Mummery at St. Marks and many others prefer the needle and ligature.

Morely of London has treated over 5,000 cases by the ambulatory method, using a 20 to 22% solution of carbolic acid, in the last two years switching to a 5 to 10% solution of carbolic acid, as in the former he had about 2% of sloughs sufficiently grave enough to produce severe hemorrhage.

Terrel, of Richmond, Virginia, has treated over 5,000 cases in the last 12 or 15 years with the injection of a 5 to 10% solution of quinine and urea, with perfect results.

INTESTINAL OBSTRUCTION DUE TO PIN WORMS (OXYURIS VERMICULARIS)—WITH CASE REPORT*

A. C. Stokes, M. D.,
Omaha, Nebr.

On January 9th, 1928, I was called in the middle of the night to see a man who was suffering with an acute abdomen. I found the patient lying in bed, his abdomen greatly distended and very hard, with a history of some vomiting. The physician had given him cathartics and enemas with no results. The patient suffered with considerable abdominal pain and seemed to localize it in the left side in the region of the splenic flexure. There was so much distension and rigidity that it was impossible to localize any lesion whatsoever. We decided, therefore, to open the abdomen, took him to a hospital and at four o'clock in the morning made a median line incision above the umbilicus. Within the abdomen we found a very greatly distended transverse colon that came out of the wound like a balloon. There was no fluid in the abdomen. There was no indication of the presence of a perforation of a hollow viscus. The small intestines were much distended as was the colon.

Examination: Both gallbladder and appendix were normal to touch. No gastric perforation could be located. Passing the hand over to the left hypocondrium I came upon a mass in the splenic flexure. It was dough-like and the growth was within the intestine, and from what information I could get by the sense of touch alone, I decided the growth was probably an annular soft carcinoma of the splenic flexure. Not seeing much hope for the man I made a colostomy in the transverse portion of the colon, which, of course, is against all rules of surgical procedure. I felt so sure that the mass was a carcinoma that I told the people it was probably a cancer of the colon and did not think he would recover. The case was some distance from Omaha and I did not see him again until seven days later, namely, on the fifteenth of January, 1928, at which time he was in very good shape, his bowels were moving normally and he was discharging a certain amount of feces from the colostomy. All signs of resistance and distension in the abdomen had disappeared, the mass in the left iliac fossa was gone and the patient seemed entirely recovered from whatever was the obstructing cause. His physician informed me that he had a rather stormy convalescence for about two days following the operation, when on the second morning after the operation the nurse called his attention to the fact that the dressing was covered with worms, and that while he had no definite way of estimating the quantity of these animals, yet he said that he judged there were as many as two handsful of pinworms on the dressing that morning when he examined it. When I saw the patient seven days afterwards, all the dressings were then alive with pinworms and the dressing had been changed within a few hours. After the evacuation of the large quantity of worms, gas began to travel through the intestines in the normal way, and then a careful study of the feces showed large quantities of pin-worms being excreted with some blood. His physician injected large quantities of thymol into the colon, through the colostomy, and another large mass of dead pin-worms was evacuated, and a cathartic brought out a lot more per anus. I use the term "a lot more" for the want of a more definite expression of quantity. There were more worms evacuated every few hours than I ever imagined could live in one person's intestines at one time. The quantity was unbelievable. After three weeks in bed and constant anthelmintic treatment the worms disappeared. The patient returned home and we afterwards let down the colostomy, and he is at the present time in fine shape.

I have searched the literature carefully and have so far been able to find only one similar case to this. *Centralblatt fur Chirurgie,* Vol. 53, 1926: Dimtrieff reports a case of intestinal obstruction as a result of oxyuris. He has found no similar case in literature. Laboratory findings showed a large partly perforated ulcerous area in the colon infected by oxyurids. The ulcer was excised. The excised tissue contained a bloody mass filled with oxyurids. The mucous membrane of ulcerous tissue was scarcely changed. The appendix was normal but filled with oxyurids. The ileus was spastic in nature.

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*Read before annual meeting Missouri Valley Medical Association, Omaha, October 31, 1928.

There are cases of obstruction due to ascaris lumbarcoides and also from strongyloides stercoralis pretty definitely recorded. Pin-worms generally occupy the areas of the colon or the ileocecal valve or the rectum. Wagner *Archives for Pathology and Physiology* for 1905, page 145, has shown that these pin-worms also enter Peyar's patches and produce tubercles between the mucous membrane and the muscularis. He found in one case several hundred of these tubercules in the small intestine. They do not seem to perforate the mucous membrane as frequently in the large intestine but Dimtrieff's case indicates that they do perforate the mucous membrane of the large intestine and produce ulceration beneath the mucosa. Dimtrieff's case of obstruction was undoubtedly spastic but there are no microscopic records showing that these pin-worms produce any particular congestion or hemorrhage into the mucosa of the intestine. They do, however, produce a certain irritability and spasticity that has been well demonstrated. In our case evidently the cecum was filled with worms and most of the colon the quantity was so great that they produced first a spastic paralysis of the intestine and second, what we think was a mechanical obstruction at the splenic flexure. It might be of interest in passing to note that the entire family which consisted of nine children and a wife were infected with this pin-worm. This infection in this country is quite widely spread, and found most commonly in children.

The embryos escape from the eggs in the stomach or small intestine and then wander to the colon, rapidly reaching sexual maturity. The fertilized female migrates to the rectum where she lays her eggs and deposits them in and around the anus, and the eggs again in turn find themselves in the mouth of the host, and in about five weeks the entire batch is re-hatched again in the colon. It is a well reported fact that heavy infections cause considerable gastro-intestinal derangement. Cases are definitely recorded where these worms have migrated into the bladder, into the vagina, into the uterus and even into the peritoneal cavity. It is not rare to find them filling an appendix and no doubt in some cases they are responsible for appendicitis.

CONCLUSIONS

1. The case above recorded is not absolutely conclusive that the pin-worms were the cause of the obstruction. It is possible that it could have been a fecolith, an accumulation of feces or some other intestinal food block.

2. It may have been an extreme degree of intestinal stasis due to the toxemia of the worms and the injuries by them to the mucous membrane.

3. Or, which we really believe it was a mechanical stop at the splenic flexure due to the migration of such a vast number of the female worms toward the rectum. It is needless to say that this family was careless about their personal hygiene, living on a farm and had probably infected each other from some one host in the family. By a little careful treatment their pin-worms have all disappeared and they are now a more healthy and better nourished family than previous to the eradication of the worms.

SOME PHASES OF MEDICAL JURISPRUDENCE*

FRANK S. HOWELL,
Formerly Judge of the Supreme Court, State of Nebraska.
Omaha, Nebr.

I am the one who feels honored on this occasion and it is for me to express that feeling. I am very much disposed to put myself in the place of the Indian chief who was being proselyted by a missionary in the most earnest manner, without let up, or without giving the old Indian any peace whatsoever and after a certain number of weeks had transpired the Indian asked the proselyter if he would loan him his cane. They were standing in a sandy spot and he took the cane and drew a very small circle in the sand and said: "See that circle; that is what Indian knows." He then drew a larger circle and said: "See that circle; that is what white man knows, and all outside that, is what God knows." I stand within the diminutive circle, while the one which represents your learning and talent is of very much greater dimension.

I was impressed with one passage of the letter which your secretary sent out to the members of this association. It speaks my sentiments and affords me an excuse for limiting the discussion of the subject assigned me, "Medical Jurisprudence", to a phase with which I have a modicum of familiarity. That paragraph reads: "The subject of medical jurisprudence is one in which the legal and medical professions are jointly interested, and regarding which there should be a better understanding between them." I did not get a copy of that letter until after I had prepared what I have to say but I deem it so appropriate, I beg to change my subject to the one suggested by your secretary and thereby get credit for an extemporaneous speech which I have already prepared.

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*Given before the Omaha-Douglas County Medical Society, Tuesday, October 9, 1928.

The field covering medical jurisprudence is so vast that I cannot hope to do more than draw a tangent touching a small segment of the great circle. Laconically defined it may be said to be "the application of medical knowledge to legal purposes" or "the medicine of the forum." I get that from one of your greatest writers. Neither in law nor in medicine have we progressed far enough to generally invite specialists into a forum in which a living can be made.

I will not undertake to trace the science of medicine—I could not do so if I so desired—nor will I attempt to estimate the remoteness of time when physicians, as such, were called upon to give testimony as to facts now recognized as susceptible of proof only by experts. In former times the unlearned and the first to reach the injured party, or the dead body, was permitted to express his opinion freely. Everybody had an opinion.

I will confine myself, superficially, to expert witnesses. Medical testimony was first legally accepted early in the sixteenth century by Germany. The earliest medico-legal writing appears to have been produced in about the year 1575. From that time until now there has been continued want of complete harmony and understanding between physicians on the one hand and the legal profession and the courts on the other, particularly as to crimes involving mental responsibility.

The precise line dividing the non-expert witness from the expert or scientific witness is not always clearly visible. Like all other problems found to depend upon nicety of distinctions, human equasions, and proneness to err, we are led into conflicts and different conclusions. The one is permitted to relate facts alone which he has observed; the other gives his conclusions or deductions from facts he has observed, or from facts narrated by others, which are assumed to be true, or from both. Physicians of experience know it is not safe to treat disease but he should always treat the patient. As I gather, from a great writer on this subject, a human body is not like a test tube, which is always the same if properly looked after. The human body has complications while the test tube interferes in no respect. Therefore, when you assail disease in the human body, in my opinion, you must treat the person, the body, the patient. Deductions, we all know, are precarious, yet in this country all that a medical expert needs, in order to qualify, is to show a license to practice his profession. He needs no experience; he needs no real practical education; the weight that is to be given to his testimony is left to a jury of twelve untrained minds, with the result, too often, of defeating justice.

In mal-practice cases it frequently happens that the only evidence of any consequence comes from experts, and under present conditions, grave suspicion is cast upon the noble profession of medicine that "birds of a feather will flock together" for mutual protection —those who are in present need of help looking to those who are guarding against a future day. I do not say that is true, but I do say that it is common suspicion.

In some countries medico-legal questions are submitted to experts who become officers of the court, stripping their testimony of mercenary consideration. In such cases two evils are removed: First, the temptation that accompanies large fees, to tell the truth and hide the facts. It is rare indeed that the lawyer in the case is possessed of sufficient learning to cope with a biased, partisan, or corrupt man of medicine who is free to fashion his answers loaded with evasions, conditions, generalities, not-necessarilies, ordinarilies, and scores of ifs; second, it will prevent miscarriages of justice based upon only a part of the whole truth.

Self-interest is not an attribute exclusive to men in the medical profession; it is inherent in mankind; it is one of the things that accompanies humanity with its faults in order that it may be distinguished from Divinity and acknowledges the Divine plan which incorporates all things in their proper places.

Doctors have quite a little advantage over the legal profession in the way of education. Under the laws of our state you have to go to some reputable school before you can practice medicine. I attribute that to the fact that lawyers, who really know a good thing when they see it, have had greater influence upon the legislation of the state than the doctors. The lawyers, as a profession, recognize the necessity of high education, but that speck of selfishness has kept us from raising our own standards. Let us hope that in the future legislatures we will find more doctors to lay a foundation for higher education and more correct standards for the admission of the lawyer to the bar.

The established practice of privately employing experts to testify in litigation, results, innumerable times, in farce, and has elicited rebukes from eminent jurists, such as Lord Kenyon and others, in the following and similar words: "Skilled witnesses come with such bias on their minds to support the cause in which they are embarked that hardly any weight should be given to their evidence."

A Maine judge has said: "If there is any kind of testimony that is of no value, but even worse than that, it is in my judgment, that of medical experts." I do not say that for the purpose of indulging in humor. Such remarks are not aimed at the individuals who compose the great body of medical men but at medical experts who hire out their talents as witnesses to help the lawyer in winning "our" case. That is the application I hope you will get and appreciate, and I know when I look at the intelligent faces in front of me that you will appreciate that I am not making any distinctions between your profession and mine. We are both bitten by the same snake, to a certain extent. We have all kinds of men in our respective professions but as a whole I cannot speak too many and too flattering words of encomium for your profession. I believe you are above us in ethics, a fact I deplore, and bow my head before you as low as you think my shame should take it. To be learned in any profession, art or science tends toward the development of correct standards, better citizenship and purer ethics.

The difference between the medical expert witness and the lawyer engagd to win their client's case, in their standing before courts, is to be found in the fact that the lawyer's sworn statement of what he deems the law of the forum to be is never accepted by courts, while that of the expert witness is. In the case of the lawyer, he speaks the language of the trial judge who understands the meaning of what he says. Usually the judge himself is learned in the law while, as a universal rule, the expert medical witness uses language almost as meaningless to the judge and jury as the dead languages themselves. Taylor reports a case where a medical witness informed the court "that on examining the prosecutor he found him suffering from a severe contusion of the integument under the left orbit, with great extravasation of blood and ecchymosis in the surrounding cellular tissue, which was in a tumefied state. There was also considerable abrasion of the cuticle." The judge said: "You mean, I suppose, that the man had a black eye?" "Yes", said the witness.

It is certain that on questions of insanity the law and medicine are hopelessly divided in the matter of responsibility for crimes.

Another marked difference between the ordinary and expert witness is degree of accuracy. Observation is rarely accurate, and accurate thinking is even more rare. I have observed so-called expert witnesses bury reason under an avalanche of theories, to every one except the trained thinker of his own profession.

What is the remedy?

The two great professions represented by these great organizations should go to the next legislature. You know it is awful hard for a politician to give you a remedy. I am not a politician, therefore, I can give you a remedy, and it is this. The legislature is available and the two great profession in this state are directly involved and interested and possess the intelligence to impress the law maker. The best plan should be worked out by the doctors and the lawyers. Whether the remedy lies in appointing a medical referee or a committee of learned physicians of integrity for each case, or some other plan, is still mooted.

The hypothetical question is said to be misused by the clumsy and abused by the clever. That expression is full of meat. As a matter of fact, the ignorant lawyer, and I plead guilty of being one of those in this line at least, rarely knows what his hypothetical question means. He loads it down, and sometimes he will have more grass in the field than corn, and the doctor looks at him sometimes, if he is a generous gentleman, with compassion, otherwise with disgust, and he shines before the jury as a great, learned medico-legal light; and justice has suffered.

I know you will pardon me if I draw on my own experiences, not for the purpose of proving I was correct on the occasion but to prove my point on this question of expert testimony. I could mention numerous cases but I have selected only a few.

A railroad grading contractor was constructing a line of railroad. It was January. There were tents for the men to live in and eat their meals in. At noon, when the weather was just at the point of thawing, men were sitting in the mess tent. Just outside were boxes of dynamite in which were exploders or caps. Coal stoves were used in the tents. The day was windy. One man got a shovel full of ashes and threw them into the air; the wind carried them towards and over the dynamite. The theory was that some small bits struck the dynamite and caused it to explode, injuring two men who were sitting in the mess tent. As one of the attorneys for the men, I learned that the defense would have an expert on dynamics to testify. Taking time by the forelock I went to the professor of dynamics of the University of Minnesota and asked him for information. I was told that the expert would testify that the point of temperature at which dynamite will most easily explode is 276 degrees Fahrenheit—(this may not be accurate)—and the further away you get from 276 degrees the safer the dynamite will be. The professor said to me: "That is true to a certain extent, but there is another temperature when dynamite is equally susceptible to explosion, and that is at the point of thawing. You get after this man when he testifies and ask him what are the susceptible points." The witness testified wonderfully and to the satisfaction of opposing counsel who looked the question: "Now what are you going to do?" I said, "Doctor, what other point is there, if there be one, at which dynamite is equally susceptible to explosion?" Then he got off his neverthelesses and ifs, and therefores on me, but he didn't answer. Unabashed, I repeated the question. He evaded it again and again and again. Finally I said: "Doctor, you know this trial doesn't end until the testimony is in and the testimony will not be in until you answer my question, Please answer." But he didn't answer until I said, "Doctor, isn't it true that at the point of thawing its susceptibility is a little bit greater than at the point of freezing. He said, "Yes". I said, "That is all", and the law suit was won.

I was called to La Crosse, Wisconsin, to try a personal injury case growing out of the use of machinery at a coal loading chute. The defendant had an eminent and learned lawyer. Their defense was that plaintiff lost his foot because of gonorrheal tuberculosis—that was the defense. After we had drawn the jury, the defendant's lawyer said: "I ask now that plaintiff be examined by a committee of the company's physicians." Under federal law he had no such right, but he had me in an embarrassing position. I said, "I will permit his Honor to appoint three well known, able physicians to be officers of this court to examine plaintiff; they shall select a chairman and let him come back into court and state for the committee their findings, without any questions from the lawyers." They reported that they found cocci indicating that the loss had been caused by cocci, etc. On cross examination the attorney for the railroad company said, "Doctor, this cocci you found there, was that the cocci you expect to find in cases of gonorrhea?" He said, "Yes". "That's all," said the attorney. I said, "Doctor, suppose this man never had gonorrhea but did have erysipelas and you knew that to be a fact, what kind of a bug would you say it was then?" "Why, it was streptococcus." "Would you expect to find that bug in erysipelas, Doctor?" "Yes." I called them bugs. The minute I said bugs the jury sat up and showed intelligence. Plaintiff had contracted erysipelas in the hospital of the railroad company. The law suit was won, but I would have lost both cases had I not been able to "mooch" the truth from another doctor.

Some years ago, a friend of mine was convicted of stealing registered mail in Shawnee, Oklahoma. He was convicted on the testimony of an expert who became famous in the Molineaux trial in New York—a handwriting expert. On rehearing we were able to show that the expert was paid one hundred dollars a day to go out there and testify. We had the post office inspector write us samples; then we mixed these all up, covered the exhibit marks and asked him to pick out the forged paper. He picked out every one except the forged one. The law suit was won.

But, in all my experience, the greatest and the most potential lie was concocted in Washington county by a medical man; yet it was the truth.

A will was being contested. The woman made the will and died within a few hours after she signed it; she was perfectly conscious but the doctor testified he saw her at midnight before she died and she was unconscious; that he returned the following morning a little before eight and she was unconscious then. The will was signed at eight o'clock in his presence and witnessed by him. The brothers and sisters who were working with this doctor to break the will, one by one, said the woman was totally unconscious for eight hours immediately before signing the will. Well, of course, I had just one poor old man, the widower of the deceased woman, to testify. He said: "I can't understand it; they are all lying." Then I ceased to be a lawyer and become a bull in a china shop. I asked questions with no sense to them, of the lay witness: "Did the doctor give her any medicine?" "Was it powder?" Was it liquid"—well, to make a long story short I finally said: "What was it the doctor give her?" Answer, "Morphine." "Then what happened?" "She went to sleep." "How long did she sleep?" "Until eight o'clock." The testimony which that doctor gave was the most damnable lie I ever heard in a court house, and yet the woman was unconscious when she was asleep. That's telling the truth but concealing the facts. We brought the opposing witnesses back one by one and my client won. I had ceased to be a lawyer and stumbled over the dead into a post mortem and found the truth. That doctor was of an honored profession. The lawyer laughed at me and said: "I almost got away with it." My answer was: "You ought to be disbarred; you are a crook and you dishonor the profession of law", and I meant it.

I want to give you one more illustration of pettifogging. This lawyer was one of the greatest criminal lawyers in the city of Chicago. A man was being tried for murder. An expert for the state was on the stand. He had written books and had become renowned. He found expert testimony remunerative; he got large fees. This defendant's lawyer said: "Doctor, you are regarded as one of the great medical experts on certain medical questions?" "I wouldn't want to claim that state of superiority." "Well", he said, "I know, but you admit you have written books and your books are accepted as authority." "Oh, well, I suppose that is true." "Doctor, you have been an expert witness in many cases?" "Yes, I have." "Marshall Field was your patient?" "Yes." "Where is he?" "Dead". "Armour was one of your patients?" "Yes". "Where is he?" "Dead". "McKinley was one of your patients?" "Yes". "Where is he?" "He is dead". "All of your patients are dead, are they, Doctor?" "That's all". That was pettifogging but the humor of it acquitted the defendant.

There are too many times when both lawyers and doctors reduce themselves to the level of cheap advertisers and I want to say to you that you are better than lawyers when it come to that, too. You do less advertising than we do. It is true this is more often found in both professions among the new members. The young, I am afraid, are getting away from ethics; I am afraid that our great professions are not going to be looked up to in years to come as they should be. The legal profession is now threatened.

There is a saying that words piled on top of words is a trick to conceal thought. We are both guilty of that, too. The expert should avoid jargon lest he finally convict himself in the presence of his brothers of ignorance or what is still worse, of infamy. You no doubt have heard a person say,—maybe we have said this ourselves,—"I know what that is, I know all about it but I can't tell it." I contend when a man is full of his subject and knows, he can tell about it. We both camouflage.

Now, I have kept you too long already. I see some women here. What I have said doesn't apply to them.

Now, finally, what are we going to do, you and me, your profession and my profession? Are we going to allow a faulty condition of affairs to exist in medical jurisprudence which we can remedy? We have the intelligence; we have the ethics; we have the desire; we have the influence. If we will just lock arms, get together and draw a bill, some expert witness bill, submit it to this man and that man and the other, make it steam tight, then go to the legislature which sits next January we can remedy a bad condition. Will we do it? I have put it up to you before I have to the lawyers. I hope soon to have a chance to address the lawyers and then I am going to give them that thing that resulted in a black eye.

I don't want you to feel that I come as a critic tonight but in the role of a constructor. I feel deeply on the subject. I thank you for the opportunity to present my views.

EFFECTIVE RANGE OF IODINE DOSAGE IN EXOPHTHALMIC GOITER: PRELIMINARY REPORT

An attempt has been made by Allen G. Brailey and Phebe K. Thompson, Boston (*Journal A. M. A.*, Dec. 1, 1928), to determine the effective range of iodine dosage in exophthalmic goiter. In twelve out of thirteen patients at rest in bed in a hospital, as great a reduction in basal metabolism was obtained with 1 drop of compound solution of iodine (about 6 mg. of iodine) daily as with much larger doses. In eight out of twelve patients more recently studied under the same conditions, half a drop of compound solution of iodine (about 3 mg. of iodine) daily was as effective as were larger doses. Three patients showed no response to any dose, and one showed a slightly lower metabolic level during the administration of 30 drops daily. The minimum dose that will produce a maximum reduction in basal metabolic rate has not yet been definitely determined. It appears in most cases, however, to be between about one-fifth drop of compound solution of iodine (1.3 mg. of iodine) and about 1 drop (6.3 mg. of iodine) daily. There are observations which suggest, but do not prove conclusively, that the minimum dose is perhaps a little less when a patient is at rest in bed in a hospital than when the same patient is at home occupied with her daily routine.

Shortly after 2 o'clock one morning a doctor drove four miles in answer to a telephone call. On his arrival the man who had summoned him said: "Doctor, I'm not in great pain, but somehow I have a feeling that the end is nigh."

The doctor felt his pulse and listened to his heart. "Have you made your will?" he asked at last.

The man turned pale, "Oh, doctor, it can't be that!" he gasped.

"You had better telephone to a clergyman and wire for your people," continued the doctor.

"Oh, doctor, how long do you give me?" groaned the man.

"Well, there is nothing wrong with you, but I hate to think that I'm the only man you've made a fool of," explained the medical man.—Weekly Scotsman.

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The advertiser makes this Journal possible by paying between five and six thousand dollars for advertising space, annually. Since the advertising is censored and nothing shady is allowed to appear in the advertising pages, the advertiser is entitled to our respectful consideration. Some advertisers say that they do not get results from advertising in the state journals that they think they should. They sometimes say the readers of state journals are irresponsive to advertisements in their own journals, but will answer advertisement in national journals. This does not look good for state journals as mediums for advertising. The point is that the reader must interest himself in the ads to the extent of asking for samples, literature, or making inquiries about the product advertised.

Every member of the State Medical Association is a joint owner in *The Nebraska State Medical Journal,* and its success depends in part, on every individual member. Every member should look over all the ads every month the same as he looks over all the reading pages. If he sees something to interest him he should send a request to that advertiser for samples or literature or both as the case may be. He may get much that is worthwhile. The advertiser checks up on the value of his advertising medium by the requests he gets for samples or literature.

Will you not, dear reader-member, take this seriously and address inquiries to our advertisers?

"WATER, EDEMA AND THE WEATHER"

In an editorial under the above title in the *Journal A. M. A.,* of December 29, 1928, occurs the following, which is interesting reading and may be correct:

> A less drastic form of water retention seems to be brought about as a result of lowered barometric pressures. This is, of course, a phenomenon more nearly within the range of ordinary physiologic adjustments to our atmospheric environment. Smith, of the University of Chicago Physiological Laboratory has reported that there is water retention in the bodies of dogs and rats when the barometric pressure is lowered from 2.6 to 9.8 cm. of mercury during a period of from twelve to forty-eight hours. This disturbance of the water balance of the body is accompanied by restlessness. Smith points out some implications from these experiments. The restlessness of various animals that is so often noted before a storm might be accounted for by the

low barometric pressure and the consequent water retention. With an animal that is particularly sensitive to this condition there is thus given a foreknowledge of approaching bad weather, so that migratory birds are away before there is any sign in the sky of a weather change. Hogs usually bed themselves down and cattle on the range become restless and seek shelter hours before there is any evidence of impending change in rection that will impress the senses of man. The Chicago physiologist emphasizes also that people who suffer with rheumatism or any one of several other disorders that make the nerves particularly sensitive claim that they can tell of the approach of bad weather because of increased pain or that they "feel it in their bones." Perhaps weather and water are interrelated in more ways than have been suspected.

THE CAPITAL INVESTMENT IN MEDICINE

A very important group, composed of economists, publicists, physicians and others, has undertaken to make an investigation of the cost of medical care, the results of which will be of great importance to the medical profession. The American Medical Association has undertaken to collect information pertaining to the capital investment in medicine and the income from medical practice.

As a part of the work of the above-mentioned group, known as The Committee on the Cost of Medical Care, the American Medical Association is to request more than 25,000 physicians, selected at random, to furnish certain data pertaining to the invested capital involved in physicians' education, intern training, post-graduate courses, office and traveling equipment, office maintenance, medical society affiliations, library maintenance and medical licensure fees.

This, as you will realize, is a survey of the profession, by the profession, and for the benefit of the profession. The questionnaire is to be anonymous and, therefore, there need be no fear of any embarrassing or undesirable results from the information returned.

A serious and thoughful consideration of this matter by the readers of this Journal is requested to the end that complete and reliable data will be given on the several items.

The importance of this survey cannot be overestimated and universal participation by those who receive the questionnaire is neccessary to the fullest fruition of the effort being made.

ANNUAL DUES

Members who have not paid their dues before this date are now delinquent. Send $8.00, plus your county society dues, to the secretary of your county society at once.

CALL FOR PAPERS

Members who wish to read papers at the annual meeting in May should send thier name and the title of their papers to R. B. Adams,, secretary-treasurer, Centre McKinley Building, Lincoln, Nebraska.

THE APPROACH OF STATE MEDICINE

When "State Medicine" is mentioned nowadays in a medical society meeting or among a group of physicians, jeers and scathing remarks are in order. However, in spite of the sarcasm of some of my colleagues, I think it is coming. Exactly what is coming, I do not know, but some form of community administration of medical affairs is on the way. Even though nothing else said this, the inadequacy of the present system of applying scientific medical knowledge to popular needs and the rapidity with which it is getting worse, say it very loudly.

The *science* of medicine has become so complex that it is too unwieldy to be conducted by an individual. My word "individual" includes an organized group of a few physicians. The *practice* of medicine is in a chaotic state, as a result. In no other profession today (except possibly that of law) is the individual practitioner so confused as to the best thing to do and the best way of doing it. Here is our state of affairs, as a result of the privileges in a free country, of every patient to go to any sort of healer he chooses, and of every medical man to practice medicine according to his own ideas.

1. Medical science is able to accomplish such wonders as the following:

To prevent all but a very small percentage of infectious disease, deformity, insanity, mental deficiency, premature death, mortality in general;

To cure all manner of diseases and relieve most of the world's suffering and inefficiency.

2. Yet, in spite of the fact that medical science *can* do these things, we find such things as the following:

70,000 cases of small-pox per year,

300,000 cases of malaria every year,

11,000 deaths from diphtheria every year, and soforth with infectious diseases.

30,000 babies born every year without a doctor in attendance.

Unaccounted thousands of school children deformed and handicapped because they need tonsils and adenoids removed.

An average length of life of 42 or 43 years, when it could easily be 60 or 70.

Inefficiency and handicaps among laboring and business men due to remediable defects, which are not being remedied.

Medical science is not being used for the benefit of humanity in general; it is merely being thrown about a bit at haphazard.

3. Medical service is beginning to be so expensive that it is a burden to people of moderate means. Among people of average means, disease with its hundreds of dollars for medical, nursing, and hospital fees, is as much dreaded as it was in the middle ages when fees were low but effectiveness was nil. For people belonging to the "poor" class, up-to-date medical services are out of question. They cannot afford them, and they do without them, unless they are of the favored few that live near free clinics.

4. Yet, with all the high cost of medical services, and considering the cost of preparation for his work and the relative value of his services to the community as compared with the services of men in other lines of work, the average doctor is very poorly paid. The yearly income of the medical man in this country averages not far from $1,000. (There are a few large incomes; but for every physician who makes $10,000 per year, there are ten who make less than $1,000).

It couldn't be worse, could it? The system doesn't accomplish much; it is too expensive to the patient, and yet it doesn't pay the doctor much.

Suppose the fire-department were a private enterprise, and charged fees. The bigger your fire, the more you have to pay for the service. If you can't afford to call them in, let it burn, and never mind what happens to the neighbors. Medical service is certainly as important to the community as fire-fighting.

Of comparable importance to the community, is education. Suppose each teacher invested private capital in equipping a school, and organized himself a little "practice" of his own, and charged fees to his pupils? The service that pupils would get under such a system, especially if figured in terms of the fees paid for it, would be insignificant compared with the existing method.

Medical care of the community is as much of a community problem as is education of children. Uncared-for personal health is as much of a public problem and a public responsibility as is an individual, privately-owned house afire, or an individual uneducated child.

It is inconceivable that such glaring inadequacies and inconsistencies will be permitted to continue. Some remedy will be found for them. What it will be is mere conjecture. Most of us consider that the political machinery can never handle the situation. Political machinery has evolved two mechanisms of indubitable efficiency: the fire-department and the post-office. Perhaps the United States Public Health Service can also be classed with them.

On the other hand, the service of education, which is fairly comparable to medical service, has had to be kept separated from the political forms of government as far as possible. Only in a nominal way does it come into contact with or depend upon what we know as "government". The school district is a fairly independent and free-acting organization, submitting only to universally recognized standards. On the basis of what we know at present, "state Medicine" will probably be administered by methods and under standardization quite analogous to that of the school district.

—Miles J. Breuer.

COORDINATION OF RESEARCH

Editor Hammond in the *Pennsylvania Medical Journal* (January, 1929), discusses coordination of medical research through a central agency to eliminate the amount of individual research now being conducted with without fruition. A central correlating agency is suggested and the proposed National Health Institute under the control of the Surgeon General of the Public Health Service is favored, and proceeds—

"There is no organization with potential resources quite so comprehensive as those enjoyed by the system of medical societies which forms a network covering the entire United States and its possessions. Furthermore, there is no organization with better facilities for international exchanges. Channels for this fellowship are already in existence, and need only use to develop their function to the fullest.

"The medical organizations of the country owe it to themselves and to their clients to establish a protectorate in health research. Cooperation with governmental agencies, foundations, and lay organizations is not only desirable but imperative; but the initiative should arise from the medical societies. Theirs is the responsibility and theirs is the privilege. This does not mean that the medical societies must necessarily finance a large program of research work. If the machinery were provided, the financial support would be forthcoming from the many individuals interested in this type of work.

"The responsibility is great and the opportunity knocks. Let the county, state, and national medical societies answer the call."

We heartily approve, for along some such lines must the problem be worked out.

DR. H. M. McCLANAHAN'S "PEDIATRICS FOR THE GENERAL PRACTITIONER"

Our honored friend and coworker, Doctor McClanahan, Omaha, has published a book, the title of which is especially well chosen. It is an octavo volume of 600 pages published by J. B. Lippincott, Philadelphia, and sells for $6.00.

No one in America today has had a greater experience or is more capable of writing on this subject than is the author. The book is readable and is profusely illustrated. There are numerous interesting concise case histories. The outline is good. In common with most monographs the book is rich in the personal experiences of the author. For this reason the details regarding treatment are practical and well expressed.

The first chapter, entitled "The Normal Human Infant", is very essential, and is especially commendable. Recommendations regarding clothing for an infant under one year have been omitted. The advice of a quart of milk in twenty-four hours for a year old baby, does not conform with our present day practice.

The chapter on Congenital Malformations and Defects is especially good. That portion relating to cleft palate and hare lip is unique in this book. It conveys to the reader the author's personal experiences with this type of infant and is a valuable contribution.

In the chapter on the digestive tract, one can see no good reason for the rather long description of the case history of congenital malformation of the duodenum, under pyloric stenosis.

As is usual in first editions, there are a number of typographical errors: for instance, on page 282 there occurs "congenital hyenaphalus": the illustrations on page 75, figures 50-51, are imperfect.

Scarlet fever serum receives rather scant recognition. There is no mention of the serum injection for prevention of scarlet. No mention is made of the rather common Exanthem Subitum.

The article on Convulsions in Infants and Children is especially good and the impression is at once conveyed to the reader's mind that the author speaks with authority and from practical everyday working experience.

Again, the chapter on Tropical Diseases is unique in this book.

The entire book is replete with helpful information to the general practitioner. The profession in Nebraska is to be congratulated on having in our membership a man of the experience and ability of Dr. McClanahan. We are proud that he has confined to paper the results of his years of rich service.

—Floyd Clarke.

THE HAVANA PAN-AMERICAN MEDICAL MEETING

The first meeting of the Pan-American Medical Association was held in Havana, Cuba, December 29th to January 3d, 1929. Dr. Fred Albee of New York, one of the founders, was also the first president. Drs. Behrens and Ferrer of New York were the secretaries. Dr. F. M. Fernandez of Havana, "Secretario de Sanidad y Beneficencia" for Cuba, was most active in preparing for and largely responsible for the success of the meeting.

Representatives from about ten of the Central and South American countries, in addition to those from Cuba and the United States, participated in the executive sessions and in the program. Dr. Fernandez was elected president for the ensuing year and Dr. R. A. Hurd of New York, president-elect.

On the last day of the meeting (Thursday, January 3d), the Cuban Government, President Machado, placed at the disposal of the officers and delegates of the Pan-American Medical Association a special train of six Pullman cars for a tour of Medical Cuba, hospitals, clinics and dispensaries were visited in Santiago, Manzanillo and Jovellanos, at each of which places the Secretary, Dr. Fernandez, and the officers and the delegates were formally received and participated in impressive public ceremonies at the various institutions. The Cuban speakers were most eloquent in their expressions of pleasure and satisfaction. Dr. J. M. Buch of Santiago, in his welcoming address, said: "I want to impress on everybody's mind that means of expression fail me when I wish to transmit to you our sensation of indebtedness for your utmost effort in uniting the profession of the two Americas. The Pan-American Medical Association has been almost life saving to the Cuban Medical profession because it has come in a very critical moment of its life."

At Manzanillo additional dramatic interest was provided by the arrival of an aeroplane seeking Dr. Mayo who was wanted as consultant in the case of Mr. Tex Rickard. Dr. Mayo could not arrive at Miami before the death of Mr. Rickard and rejoined the party upon its return to Havana. Both Dr. Mayo and Dr. Albee were invested in

Havana for distinguished Medical Services with the "Order of Dr. Carlos Finlay", and in addition Dr. Mayo was given an Honorary degree by the Medical School of the University of Havana.

Dr. Inclan of Havana and the writer were the speakers upon subjects of principal interest to orthopedic surgeons.

—H. Winnett Orr.

EDITORIAL PARAGRAPHS

We may as well pay the dues now, since we must do it sooner or later.

The heart of the average adult pumps seven and a half tons of blood a day says Dr. C. W. Hopkins, Chicago.

It has been pretty thoroughly demonstrated that vaccines are of but slight benefit in the prevention of influenza.

According to a report made before the American Association for the Advancement of Science, synthetic insulin is on the way.

Science announces that Dr. E. B. Hart of the University of Michigan has found that the presence of copper in the diet is a preventive of anemia.

This number of the Journal has sixteen additional pages of reading matter, fifty-six pages, made necessary by timely articles. This is the largest Journal ever issued.

The Sioux Valley Eye and Ear Academy under the presidency of Dr. Sanford Gifford, Omaha, met at Sioux City, January 22, with four numbers and a banquet on the program.

A non-partisan legislative committee of five physicians and five attorneys on expert testimony has been appointed by the Omaha-Douglas County Medical society—a timely movement.

The membership of the Nebraska State Medical Association for 1928 was 1204. With approximately 1900 physicians in the state the eligible for membership list must be considerable.

A comparison of the cost to several institutions of medical education per student is given by the lay press as follows: Iowa University, $19,622; Nebraska University, $2,000; Creighton University, $1,000.

The new surgeon general of the navy is Charles E. Riggs, a native of Iowa and a graduate of the Iowa University College of Medicine, 1892. He has been in the navy since the Spanish-American war.

Following a By-Law passed last year, the president-elect of the Nebraska State Medical Association does not become president until the first day of the annual meeting, when he will be inducted with appropriate ceremonies.

Field, a London publication, announces that the Distemper Research Committee, after five years of work, has brought out a proven immunization serum for dog distemper. Thirteen hundred dogs were immunized before the discovery was announced.

Studies seem to indicate that a carbohydrate diet favors those flora responsible for tooth decay and that diet largely of fruits and vegetables is of more importance than the tooth brush. At the Iowa University they seem to have proven that under a proper diet decay of teeth will cease and the cavities heal.

The Bureau of Examining Boards advises that the date of the next medical examination has been set for February 13th to 15th, to be held at the University College of Medicine, Omaha, Nebraska. All applications for this examination should be on file in the office at least fifteen days prior to the date of examination.

"The evidence accumulated during 1918 indicated that there was no convincing proof that the closing of schools had any effect on the spread of the disease (influenza). This naturally would apply also to the closing of theaters, churches, moving picture shows and similar places in which a number of persons assemble", says Dr. Morris Fishbein, editor of the *Journal A. M. A.*

The Inter-State Post Graduate Medical Association of North America announces an American Spring Assembly between April 15 and May 9, starting at Rochester, Minn., and moving eastward to Boston and south to Washington, D. C., and the Foreign Assembly sailing from New York, May 18, and includes in the itinerary the leading cities of Great Britain, Norway, Sweden, Denmark, Germany, France, returning July 11.

For his work in an investigation of the ductless glands and particularly in his isolation of pituitary hormones, Dr. Oliver Kamm, director of chemical research of Parke, Davis & Company, manufacturing chemists, has been awarded the $1,000 prize by the American Association for the Advancement of Science for the "most noteworthy contribution to science presented at the annual meeting."

The attention of secretaries of county and district medical societies is respectfully and enthusiastically called to the report of the Burt County Medical society meeting recently held. That report is a model of the kind of reports we would like to have for the Journal from every county and district meeting. The little report the editor is obliged to write from either a program or a press clipping is a very lame excuse for a real report. Let the secretaries give us the real thing.

The question of the admission of osteopaths to practice came up in the Buffalo City Hospital and after much thought it was ruled that only those physicians may treat patients in the Buffalo City Hospital who are eligible to membership in the American Medical Association, and the attached telegram from the American Medical Association was quoted to substantiate the decision:

> "All associations having to do with hospitals unanimous in opinion that any hospital which admits to its staff any other than a properly trained physician is unworthy of approval. All court decisions uphold boards or trustees in right to remove from or keep off the hospital staff any practitioner whom they believe morally or professionally unqualified to care for sick or injured people."

We suspect that an article sent to medical journals for release entitled "Eat Less and Grow Thin", contains subtle propaganda in favor of smoking. The gist of the entire article is that 98% of the medical directors of leading life insurance companies concur in the opinion that overweight can be successfully combatted by diet, by the elimination of sweets and starches and by the substitution of other things for the craving for sweets and the desire for heavy eating—and then quotes a number of well known medical directors to the effect that smoking will combat the desire for sweets and starches. We may agree with all that is said and yet object to the subtlety of the article.

JUDGE FROST WRITES ON BASIC SCIENCE LAW

Dr. Geo. A. Dowling,
Seattle, Washington.

My dear Doctor:

I am writing you at the request of Dr. E. W. Rowe of this city. Our Legislature in 1927 passed a Basic Science Law. This law covers the same subjects as are covered by your law and in addition bacteriology. I am enclosing to you herein a copy of our law. It is not materially different from the Washington law; it is a little more complete and has some good features which are not in your law. For example, Section 8 provides that the State Board of Examiners in Basic Sciences may, in its discretion, waive the examination required in an earlier Section upon proof that the applicant has passed an examination in the same subjects before the Basic Science Board of another state, or before a Board authorized to issue licenses to practice the healing arts in another state, provided the requirements are, in the opinion of the Board, not less than those provided for by the act, and provided also that like exemptions are granted persons from this State. In other words, Section 8 provides for reciprocity between the different Basic Science Boards, or between the licensing Boards that examine on the same subjects. I am wondering how your Basic Science Board handles the subject of reciprocity.

In another feature, your law is much clearer than is the Nebraska Law. I refer to the part taken by the Director of Licenses under the Washington Law and by the Department of Public Welfare under the Nebraska Law. In Washington the Director of Licenses seems to be the administrative agency that handles the preliminary details and determines who is entitled to take the Basic Science Examination and may, upon the request of the Examining Committee, conduct the examination itself. The Nebraska Law leaves most of these details to the Basic Science Board; this the Board has found impracticable and has delegated the details of the examinations to the Director of the Bureau of Examining Boards, the licensure agent of the Department of Public Welfare.

Anyone who has had much to do with the licensing to the different professions knows the difficulties connected with the granting of reciprocity to applicants from other states. The increased difficulties which would follow the adoption of the Basic Science Law were anticipated by the drafters of that law. However, that law was prepared before the adoption in Nebraska of our Uniform Licensure Law, which is a codification of the practice acts of ten different groups or professions. As a matter of fact, the Uniform Licensure Law and the Basic Science Law were passed at the same session of the Legislature and the drafters of neither law could know that the other law would become effective and its provisions considered. The Uniform Licensure Law was adopted by the Legislature and signed by the Governor a week later than was the Basic Science Law. Therefore, under the rulings of the Nebraska Court, where there is a conflict of the provisions, those of the Uniform Licensure Law must prevail as the last to be adopted. One of its provisions, after setting out many details, is that the applicant must come from a state that maintains standards regulating its profession equal to those maintained in the profession by Nebraska. While this provision is taken from the Uniform Licensure Law, still many of the old practice acts had almost an identical provision. It is this provision which has caused much uncertainty about reciprocity. The Attorney General's office early indicated in an opinion to the Secretary of the Department of Public Welfare that Nebraska could not have reciprocity with states that did not have a Basic Science Law. That holding caused consternation among the friends of that law. During the fight for the adoption of the Basic Science Law before the Legislature the argument had been that that law would cut the quacks and require all to be grounded in the fundamental sciences. Perhaps the friends of the law had in mind, in using this argument, other groups practicing the healing arts rather than the doctors in medicine and surgery. At any rate this argument in the early stages of the interpreting of the Basic Science Law bore fruits that the friends of the law had not anticipated. The Board of Examiners in Medicine and Surgery, when the question was submitted to it by the Department, hold that the Basic Science Law had not raised the standards theretofore existing and that reciprocity might be continued with these states that had enjoyed reciprocity prior to the passage of the new law. The Basic Science Board ultimately reached about the same conclusion; however, reserving to itself a discretion as to whom exemption from examination might be extended. The Law fairly gives that discretion to the Board, but it should be exercised with great caution if the charge of partiality is to be avoided.

There has been some complaint about the needless repetition of the examination covering the Basic Science subjects. The Board of Examiners in Medicine and Surgery have felt it necessary under the law and in this it is following an opinion of the Attorney General's office to require applicants who have taken the examination in the Basic Sciences before the Basic Science Board to take a second examination on these same subjects before it. This can only be remedied by an amendment to the medical practice act contained in the Uniform Licensure Law. In another respect there is a needless repetition of the examinations. The Uniform Licensure Law very properly provides that the department may accept, in lieu of examination before it, a certificate of examination issued by the National Board of Medical Examiners. The Basic Science Law, however, does not contain a similar provision and, therefore, the certificate of the National Board cannot be accepted but the examination must be repeated. This can only be remedied by an amendment of the Basic Science Law.

It is too early to know just what effect the Basic Science Law is going to have upon the number of applicants to take the examination in the healing arts. Our records show that there were much fewer licenses issued the year following the passage of the Basic Science Law than were issued during the year immediately preceding. For example, in medicine and surgery for the year preceding its adoption 92 licenses were issued to those who had successfully taken an examination while 16 licenses were issued to those coming to this state by reciprocity, or a total of 108 licenses. During the year following 74 were admitted by examination and 4 by reciprocity, or a total of 78 for the year. This is just thirty less licenses issued during the latter period.

In Osteopathy, the year before the passage of the Basic Science Law, 28 were admitted by examination and 5 through reciprocity, a total of 33; while the year following none were admitted by reciprocity and only two as the result of an examination.

In Chiropractic the result was even more startling. The year before the passage of the Basic Science Law 31 successfully passed the examination before the Chiropractic Board while 27 were admitted through reciprocity, or a total of 88. While since the law was passed not a single chiropractor has received a license in Nebraska.

I do not think that in the long run the same falling off in licenses issued will continue. There will be a readjustment and the applicants will learn that they must prepare themselves for these fundamental sciences. I am sending you, under separate cover, a copy of our Uniform Licensure Law to which I have referred frequently in this long letter.

Very respectfully,

Lincoln Frost.

AUXILIARY NOTES

The Lancaster County Auxiliary held an informal tea at the home of Mrs. Oliver Everett in November. A program of reading and musical numbers was enjoyed by more than fifty members.

Refreshments were served at the close of the afternoon.

The outgoing officers take this opportunity to thank the members for their fine spirit of cooperation during the past year. May the good work they are fostering find even greater success during the next administration.

The members of the executive board of the Auxiliary were entertained at a luncheon by the president, Mrs. S. A. Preston at her home in Fremont, January 10, and the business of the Auxiliary was discussed, and plans made for the annual meeting.

THE SOCIETIES

Regular meeting of the **Omaha-Douglas County Medical Society,** held in the Medical Arts Auditorium, Nov. 13, 1928, President Overgaard in the chair.

The secretary read the report of Dr. Frank Conlin, chairman of the committee in charge of the campaign for the bonds for the new County hospital. His report was unanimously adopted by the Society and he was given the unanimous vote of thanks of the society for the efficient work he had done.

Dr. Bennett presented a case of an unusual and interesting type of brain tumor in the fourth ventricle. Dr. Keegan discussed the operative findings and Dr. Peirce the x-ray treatment in that type of tumor.

Dr. M. C. Howard read a paper reviewing the 34 cases of arthritis at the County hospital during the past four years, and presented two cases now under treatment in that institution. This was discussed by Drs. Bennett, Bridges, Lord and Peirce.

A case of cerebrospinal syphilis was presented by Drs. E. L. MacQuiddy and Thomas Houlton. This was discussed by Doctors Lord and Johnson who suggested that it might be a case of Kummel's or delayed compression fracture.

Dr. J. E. Summers gave a brief talk on acute mesenteric thrombosis.

Regular meeting, November 27, 1928, Dr. Overgaard presiding.

Dr. G. W. Covey of Lincoln presented a case of aortic aneurism with electrocardiograph tracings.

Dr. E. W. Rowe presented a very elaborate study of a visualization of the gallbladder with an interesting chart on the study of the gallbladder. This interesting paper was discussed by Drs. A. C. Stokes, A. F. Tyler and Carelton Peirce.

Dr. A. D. Munger of Lincoln discussed a problem of tuberculous kidney with a detailed discussion of 28 of these cases that he has cared for in the past several years. This paper was discussed by Dr. W. N. Anderson and Dr. W. L. Ross.

This meeting was well-attended, there being twenty-five men representing the Lancaster County Medical Society.

Before meeting a dinner was given the visiting members of the Lancaster Medical Society at the Athletic Club, our society acting as host and being represented by the Council.

Annual meeting, December 11, 1928, called to order by President Overgaard. The following officers were elected: President, Dr. J. Frederick Langdon; Vice President, Dr. Charles W. Pollard; Secretary, Dr. Herman Jahr; Delegates to Nebraska Medical Association (two year term), Dr. Fred Wearne, Dr. R. W. Fouts, Dr. C. C. Tomlinson; Alternates, Dr. Russell Best, Dr. F. O. Beck, Dr. W. L. Sucha.

Mrs. J. Musselman, head of the Girls' Physical Education Department of Technical High School briefly outlined the work they were doing and some of the problems they met.

Dr. F. W. Niehaus read a paper on "The Schilling Leucocyte Count", which was discussed by Drs. W. N. Anderson, A. S. Rubnitz, and B. C. Russum.

The **Burt County Medical Society** met at Lyons, December 4, and after a splendid dinner with the Lions Club was called to order by President Wood. Dr. L. E. Sauer was elected president; Dr. H. W. Benson, secretary-treasurer; Dr. L. Morrow, delegate.

Dr. R. E. Hall presented a case of an infant six weeks old with "Congenital Hypertrophy of Tongue-Macroglossia". The baby weighed ten pounds at birth; normal delivery and family history normal. The tongue protrudes and is somewhat larger on the right and at the present time is even larger than a normal adult tongue. No evidences of mongolian or cretin. As far as could be determined it was in all probability a muscle and connective tissue hypertrophy. Such cases are considered rare and may remain stationary for years. The tongue tissue appeared to be normal except for the size. A possibility of aberrant thyroid was discussed but not determined. Dr. Hall promised to report at some future meeting the progress of the case.

Dr. W. C. Keettel presented the history of a boy who was running, stumbled and violently fell on his abdomen and face with immediate symptoms of shock. On being called, he found evidence of an acute abdomen with apparently fluid on percussion. Surgical consultation was immediately called and quick preparation made for operation. Upon opening, the abdomen was full of blood and a large wound in the greater curvature of the stomach from which blood was oozing. A specimen of urine showed blood. A rapid closure of the wound was made because of shock and two transfusions given. Because of the continued oozing around the wound pack he was reoperated on the fifth day. Packed to control hemorrhage from right kidney which still persisted and the case watched. Urine began oozing from abdominal wound and after considerable time during which transfusions were given, x-ray, etc., the boy made an uninterrupted recovery. Stomach healed by primary union, no peritonitis, no hernia and an apparently normal functioning kidney and at the present time his condition seems to be practically normal.

Dr. Keettel also reported three cases of intussusception in the family of two sisters. In one case a child two years of age had intussusception and again at four years of age. A case of intussusception also occurred in the other sister's family, which lead to the suggestion that the condition causing these cases was probably a hereditary trait. A general discussion of intusseption and consequent obstruction followed.

Dr. H. W. Benson read a paper on "Some Complications of Para-Nasal Sinus Infection" and gave a general summary of the clinical features noted in 58 cases.

Dr. S. A. Swenson closed the program with a paper on "Ultra-Violet, Its Uses and Dangers", which was followed by a general discussion on the value of the various ray treatments.

—H. W. Benson, Sec.

The annual meeting of the **Madison Five Counties Medical Society** was held at Norfolk, January 9, with twenty-five present. Dr. R. A. Frary, Stanton, was elected president and Dr. E. L. Brush, Norfolk, was reelected secretary-treasurer.

In an endeavor to improve the character of the programs the following action was taken:

Whereas, The method in use the past two years by the Madison County Medical Society of having outside talent put on the programs has been eminently successful in creating interest and attendance—Resolved that we commend the same and recommend its continuance in the future: But, Whereas it does not bring out the local man as he needs to be brought to the fore; Resolved that hereafter there shall be at least two numbers on each program; one number presented by the members of the committee on program for that meeting; either a case report or a scientific paper.

Dr. E. J. Mitchell was elected president of the **Scotts Bluff County Medical Society** at the annual meeting held December 20; Dr. Ted Riddell as secretary-treasurer. Dr. Cooper was named as delegate to the state convention.

Problems and practices of the county organization were discussed at the meeting, which was well attended.

At the annual meeting of the **Gage County Medical Society** held January 10, the following officers were elected: President, Dr. Roy Noble; secretary-treasurer, Dr. F. W. Buckley. Papers were read by Drs. C. P. Fall, Ada Platz and H. G. Penner. Dinner was served at the Y. W. C. A. rooms preceding the business session.

HUMAN INTEREST TALES

The marriage of Dr. Philip Levy and Miss Anne Ackerman, Omaha, is announced.

The marriage of Dr. J. P. Brown, Stuart, and Miss Sophia Wefso of the same place, is announced.

Dr. Rolland Ensor, Omaha, submitted to an operation for appendicitis in December.

Dr. A. J. Courshon, for the past year located at Norfolk, has located at Chadron.

Dr. and Mrs. Lucien Stark, Norfolk, celebrated their silver wedding anniversary, December 16.

The annual meeting of the Nebraska State Medical Association will be held in Omaha, May 14, 15, 16.

Dr. H. L. Blosser, recently from Lakeside Hospital, Cleveland, has become associated with Dr. C. E. Sayre, Norfolk.

Dr. T. E. Fairall, Tecumseh, has been in continuous practice at that place for forty-nine years, and is still active.

Dr. M. N. Newquist of Bloomfield has sold his equipment to Dr. G. N. Nilsson of Omaha who will occupy the field.

Dr. Milton Carrig, native of Columbus, recently from Chicago and Iron Mountain, Michigan, has located at Norfolk.

Dr. P. G. Mockett, Kimball, has treated himself to a new office building fully equipped with the more modern appliances.

Dr. H. Winnett Orr, Lincoln, was among those on the program of the Pan-American Medical Society meeting at Havana, last month.

The sympathy of the profession goes out to Dr. and Mrs. E. O. Weber, Wahoo, in the loss of their son through an auto accident in New York City.

The prison sentence of Dr. C. P. Egbert, Hastings, for killing his son-in-law, has been commuted to six years and this will result in his release within a year.

A one hundred thousand dollar home for Nurses—we measure things by figures in Nebraska—has been opened in connection with the Lincoln General Hospital.

It is reported that the campaign for funds for a Lutheran hospital at Fremont had to be abandoned, for the present, at least, for want of sufficient response. The amount aimed at was $200,000.

The Military Surgeon for January contains a report of the Fourth International Congress of Military Medicine, also a group picture of the five American delegates who attended, Dr. D. C. Hilton, Lincoln, being one of them.

Application for reinstatement as a medical practitioner was denied Dr. Leslie S. Fields, recently released from the penitentiary, where he served sentence for criminal abortion, was denied by the Department of Public Welfare.

NECROLOGY

S. J. Bridenstine, Seattle (Ballard) Wash.; Medical Department Iowa State University, 1875; the first graduate practitioner at Madison, Nebr from 1875 to 1889; in practice since then at Port Orchard and Ballard, Wash.; former member Nebraska State Medical Society, died November 25, 1928, aged about seventy-seven years.

G. A. McMillan, Elgin, Nebr.; McGill University College of Medicine, 1890; practitioner at Elgin for thirty-five years; died after a lingering illness, January 3, 1929; aged about sixty-seven years.

H. E. Funk, Culbertson, Nebr.; Ensworth Medical College, 1909; member Nebraska State Medical Association; died of pneumonia, December 5, 1928, aged about 46 years.

PRINCIPLES OF TREATMENT OF STONE IN BLADDER

Hugh Cabot, Ann Arbor, Mich. (*Journal A. M. A.*, Dec. 22, 1928), discusses first the treatment of "complicated" stones in the bladder, meaning by this phrase that the stone is associated with some other condition of the bladder which in and of itself requires treatment, and "uncomplicated" stone in the bladder, which will be held to mean those stones, whether originating in the bladder or coming from the upper urinary tract, in which there is no other condition of the bladder that in and of itself requires surgical treatment. According to the definition of the phrase as stated, it will be seen that the group of uncomplicated stone in the bladder under modern conditions is really the group of cases in which the treatment of stone in the bladder as a primary objective can be properly considered. Stone in the bladder may be treated by one of two methods: It may be removed by incision, or removed by crushing and evacuation by instruments. For the latter method the term "litholapaxy" is used. In considering any method of treatment, the advantage to the patient must always be the prime consideration. Litholapaxy is a method always in the interests of the patients when it can be carried out satisfactorily. The shortened convalescence, the lesser insult to the patient and the avoidance of supra-pubic scars which may complicate and render more difficult of access any future lesions which the patient may have in the bladder are the fundamental considerations in this conclusion. There are three contraindications to litholapaxy: (1) Disproportion between the size of the stone and capacity of the bladder; (2) stone having as its nucleus a foreign body that cannot be crushed; (3) patients in whom the instruments necessary for litholapaxy cannot be passed through the urethra. There is a group of borderline cases which include some of the cases in which the stone has as its nucleus a foreign body and a group of cases in which the stone lies not in the bladder but in a more or less dilated prostatic urethra. In the first instance, that of the foreign nucleus which is not metallic but which may for instance consist of a fragment of catheter, the conscientious surgeon may hesitate to apply litholapaxy for fear that he may be unable to carry the operation through to a satisfactory conclusion. In this dilemma he may, after careful consideration, decide on the suprapubic method of attack but Cabot thinks the decision is often made without sufficiently careful balancing of the alternatives. If he should find that the operation is not going to be satisfactory, he may then open the bladder above the pubes without removing his lithotrite and leave his patient in exactly as satisfactory a condition as if the suprapubic method of approach had been selected. In regard to the second group of cases, it has been generally assumed that a stone which did not lie in the bladder could not be dealt with by litholapaxy. In two cases of stone in the prostatic urethra it was found possible, by the introduction of a sound into the urethra and the finger of the left hand into the rectum, either to break the stone without injury to the prostate or to push it backward into the bladder. In both cases, litholapaxy was then successfully carried out and the short and satisfactory convalescence associated with that operation resulted.

IODIDE AND HEALTH

The extensive use of iodine in the prophylaxis of goiter has focused attention on the possible physiologic consequences of prolonged administration of this element. Hanzlik and his coworkers have made observations on rats. To an otherwise adequate ration, sodium iodide was added in amounts that corresponded to 3.3 mg. daily per kilogram throughout the major part of the life of the rats. This dosage would correspond to about 0.23 Gm. daily for an adult of 70 Kg. It was found that the continued administration of iodide in small daily doses in foods over long periods caused moderate though variable increases in weight and growth of the body in the majority of animals. The same tendency was indicated in rats on a deficiency diet. In contrast to the results obtained with iodide were those with sulphocyanate, bromide, arsenic, thallium and manganese. From these experiments there is no reason to believe that the prolonged use of iodide in small doses under ordinary conditions is detrimental. Hanzlik warns, however, that this would not apply to the continued use of iodide in specific conditions of the thyroid, or to large doses of the drug. (*Jour. A. M. A.*, December 1, 1928, p. 1720).

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ANEMIA IN INFANTS AND CHILDREN*

CLIFFORD G. GRULEE, M. D.,
Clinical Professor of Pediatrics, Rush Medical College,
Chicago, Illinois.

I should like to preface my remarks on Anemias of Infancy with two general observations. There has been a marked tendency to confuse two things. One is anemia and the other is pallor. The two are absolutely different. Pallor is most common. Anemia is not so common. Pallor is due to constriction of the peripheral blood vessels as much as it is due to the lowering of hemoglobin and red blood cells themselves.

The second point has not been so frequently made; that it is not always to be determined whether an individual is anemic by the blood count. I had a child come into the clinic with a hemoglobin of 105 and a corresponding increase in red cells. The child was evidently in rather poor condition. Within three or four days, the child was in better condition. The hemoglobin was down to 50 and there was a corresponding reduction in red cells. That means that anemia is just as much concerned with the hemoglobin and the number of red cells per unit of tissue as with the count of red cells and hemoglobin in the blood.

You will frequently see at autopsy, the organs are pale, although these children had a high blood count—a high hemoglobin. They were suffering with anemia just as much as the child with the low blood count and high hemoglobin.

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*Presented before the Missouri Valley Medical Association meeting, Omaha, October 31, 1928.

I propose to enumerate some types of anemia which we meet in infancy and childhood. Most men in the medical profession do not realize the scope of pediatrics . It takes up three phases rather than one. The pediatrician has of necessity to deal with disease as it occurs in the newborn, in the infant, and in the child. The three are decidedly different. Therefore, we must take up anemias from the standpoint of these three groups.

The first group is the anemia of the new-born. This is a congenital anemia, largely, but not always. It is only within the last few years that anemias of the new-born have been recognized. Dr. Donnelley of Washington, D. C., was the first to describe a case. I do not mean the anemias due to hemorrhage. I am persuaded that these anemias are much more common than we have thought. I have seen three or four myself, and yet not more than a dozen are reported in the literature. They are peculiar. The first one I recognized was one day just before a clinic. A child had been born at seven o'clock that morning. My clinic was at nine, and I made rounds at half past eight. Anyone could tell that the child was anemic. When we made the count at an hour of age, it had something like 50% hemoglobin with a corresponding reduction of reds, which is more marked than it seems, because in the newly born we get from 100 to 120 per cent hemoglobin.

Those anemias of the new-born get along very well, as a rule. The child has rather profound anemia, but without treatment, by the time the child is two months old this has disappeared. There is nothing particularly characteristic of these cases. They are of the type of a secondary anemia which frequently at that time of life shows nucleated red cells.

I had one unusual experience. The baby was perfectly healthy until the eighth day. I saw it the afternoon of the tenth day. No blood count had been made previous to the ninth day. The obstetrician, however, said the child had been a perfectly normal, healthy baby. On the morning of the ninth day, they noticed it was pale. I saw it on the morning of the tenth day, when the baby had a profound anemia. The child died that afternoon. A complete autopsy failed to reveal any foci of infection, nor was there any evidence of leukemia or allied conditions. It showed no hemorrhages to account for the severe anemia. The case is somewhat unique, I think. Most of these cases of anemia in the new-born get well without treatment. On an ordinary diet, the hemoglobin and red cells come up and the child gets along well.

When we come to the question of anemias in infants, we come to a somewhat different proposition. The anemias of infancy are decidedly different from the anemias I have seen at any other time of life—some of them morphologically, some of them etiologically. For the sake of discussion, it is probably just as well to divide them into the two usual categories of secondary and primary. The secondary anemias of infancy are quite common. The other day I was able to pick up four or five out of a small ward of twenty beds.

The interesting thing about the secondary anemias to me has been the etiological factors involved. The most common, probably, of these secondary anemias is that due to infections—usually upper respiratory infections, but very frequently if pyelitis is present, the anemia seems to be more profound—at least, the pallor is greater.

The prevalence of infectious conditions as a cause of anemia has led me to reject other causes unless infections are not present and never have been. Secondary anemias of the kind that have been termed nutritional anemias I think are usually of infectious origin. These infectious anemias are not very profound. They are usually characterized by a certain stubbornness. They do not show a tendency to respond easily, and especially not unless we get control of the infectious processes themselves. If this happens to be an acute upper respiratory infection which disappears within a reasonably short time, then the anemia usually clears up with the usual treatment; sometimes, perhaps, without. But if we have a long-drawn-out infectious process accompanied by anemia, we are not likely to have much success in controlling it by ordinary methods.

Perhaps the next most common type is that which we frequently see in premature infants. Whether or not there is some accompanying cause we cannot well say. It is a peculiar fact that such a large proportion of the premature and congenitally debilitated infants show anemia of a peculiar type. This usually has the general characteristic of a chlorotic anemia—a low hemoglobin and high red cells. This fact suggests that the etiologic factor may be a lack of iron in the body, due probably to the fact, that during the last two months of intra-uterine life there is a deposit of iron in the liver and the spleen. If the body is deprived of this iron, it would seem possible that it might go for two months without showing much anemia, and then develop one of the chlorotic type. This is exactly what happens to these premature infants. They show no anemia for a while and then, without our realizing it, gradually become anemic. These children usually respond well to treatment.

The next group is a group which has been called nutritional anemias. Ordinarily the physician regards the group of nutritional anemias as a large one. As I have already indicated, my impression is that the majority of so-called nutritional anemias are complicated with infection, and, therefore, I do not believe we can call them purely nutritional anemias. The most classical picture of nutritional anemia is one we see little of in this country, but which is prevalent in Germany, goat's milk anemia. Goat's milk seems to have a peculiar faculty of producing anemia in these children in a large percentage of cases.

You do get true nutritional anemias the basis of which is hard to determine. If it were simply a matter of depletion of iron, you would think many of these children would show profound anemia. There must be another factor. There must be some defective quality in the metabolism which produces an anemia in these children. That would seem to be especially true in cases of goat's milk anemia.

Other types of anemia in infancy are those which occur in various blood diseases such as hemorrhagic disease of the new-born, various types of purpura, and, of course, hemorrhage. Recently we have seen quite a few anemias which to our mind were due to lead poisoning. A lot of these babies have the habit of chewing the paint off their beds. They will come down with a typical lead colic, with anemia of a mild degree. It is almost impossible to get a positive test for lead in the stools and we have never been able to find lead in the urine, nor have lead lines on the gums been seen. They do, however, have many stipled red cells and improve when their habits are controlled.

When we come to the so-called primary anemias of infancy, there is one which to every pediatrician stands out, and yet is the most vague. That is the so-called anemia pseudoleukaemia infantum. What it is no one has yet been able to determine. Von Jaksch described a type of anemia accompanied by splenomegaly and immense enlargement of the liver. To his way of thinking, this condition always resulted in recovery.

There is a great deal of disagreement with his opinion, however. I think in my cases there has been a death rate of at least 50 per cent. This anemia is a peculiar thing. The anemia usually begins about the sixth month to the second year. It is not common after the second year, yet I have seen one case that gave a typical picture as late as six years of age . The outstanding feature is not so much the anemia. You have enlargment of the spleen and enlargement of the liver (which is not correspondingly great), and an anemia which may or may not be profound.

I have a child now under observation which I saw first at three months of age. Splenomegaly had been present for several weeks, as had the enlargement of the liver. The child had a hemoglobin of about 45 to 50 per cent. This child had some deep injections of iron. When he was brought to me, I put spinach in the diet. The child without any other treatment, on later examination showed 80 per cent hemoglobin and 4 million reds, which is perfectly normal for a child of his age. This was a surprise to me in view of my failure with more strenuous methods in other cases. The blood picture does not depend upon the anemia, but rather upon the number of white cells and the smear. At one time you may find the white cells count as low as 5,000. At another time you will get up to 100,000. There are frequently 50,000 so-called white cells. In the smear we find every type of cells—basophilic cells, and some for which we cannot give a name and simply call them smudges. The red cells, show every type of change. But the outstanding thing in the red cells is the presence of megaloblasts. In very few anemias do you get megaloblasts except in the von Jaksch's type. The picture is not a characteristic picture, but very suggestive.

Let me turn to this child I am watching now. The hemoglobin is up. The red cells are up. The number of whites is 20,000. When we made a smear yesterday, we found the type of cells to be more immature than previously. There was a greater variation from normal among the white cells. We felt it was rather a sign of danger than that the child was recovering. I have had some peculiar experiences with this type of anemia. I had several rather mild cases apparently cured by intraperitoneal transfusion. I supposed I had struck something really of value. One fall there came two cases, and the next spring another one. The first two ran the same course. They were given large quantities of blood intraperitonealy. I think for six weeks they went along beautifully. The hemoglobin came up. They left the hospital at the end of six weeks in excellent condition, and I was greatly encouraged. At the end of two weeks, both were back in the hospital in a condition as bad as when they came in the first time, and nothing we could do helped. Within three weeks they died.

I had a similar experience the next spring. They were all in children over two years of age. In one case we got a complete autopsy and in another an incomplete autopsy. In neither did we have signs of a myelogenous leukemia. They were von Jaksch's anemia, but what it is we do not know.

The other types of primary anemia in the infant correspond well with like anemias of the adult. It is not often we meet with an aplastic anemia. We see symptoms often in negro babies of sickle-cell anemia.

When we come to older children, the types with which we meet correspond more closely to that of the adult. However, the aplastic anemia I think is more frequent. I have never seen a true case of pernicious anemia in a child under ten years of age. I have occasionally seen the different types of leukemias, which are associated with a certain amount of anemia. As far as symptoms are concerned, many do not show symptoms greatly different from those of the adults.

There are some considerations which I think should be given to anemia from an etiologic standpoint. It seems to me the important thing to determine in an anemia is, first, whether it is a deprivation anemia—whether due to an insufficient quantity of iron. I think it has been presupposed too frequently that such is the case simply because the amount of iron in the food is somewhat below what the child needs. The child comes into the world with a deposit of iron sufficient to cover its needs for several months.

Another consideration is, is it due to destructive processes which result in a failure to utilize the iron? That, it seems to me, is much more likely. Yet to tell what chemical substances in the individual case are to blame has, up to the present time, proven entirely impossible.

Now as to the treatment, I differ a great deal from most people in the treatment of anemias. I feel that any child who will do well on iron in the form of ferric chloride or something of that sort will do just as well if that quantity of iron is put into the food in the form of spinach or egg. It is rare I employ any form of iron other than that in food. Those who have had most to do with iron have said it does not make any difference in what form it is given, it is utilized in the same way. You can give plain metallic iron if you wish. It is not improbable that a large proportion of iron which we get in milk comes from the cans rather than the cows.

In treating some of these anemias, there seems to be something more necessary than the supply of iron. I believe that something is supplied in many instances by blood. I do not think you can regard transfusions as of value merely on the basis of the amount of hemoglobin put into the child. I believe they supply something else. In giving intraperitoneal transfusions, one is struck with the fact that while it takes from three days to a week to get much reaction on the part of the hemoglobin and red cells, the child in twenty-four hours is a different child. Therefore, I think many of these cases are materially assisted by giving them blood.

To the average man who is doing work on adults, the giving of blood intraperitoneally seems a formidable procedure. If he stops to think that it is much less formidable, especially technically, than giving it intravenously, and that this blood is in many instances very necessary, he will see our reason for giving it so frequently intraperitoneally. It is pretty generally employed now among pediatrists, I think . It is a simple technical procedure and the number of untoward occurrences is so minimal that one can accept it as a measure almost without danger. The results are such as to be of a great deal of value.

I do not believe in many nutritional conditions, the use of blood intraperitoneally is of value. I have tried it several times in cases of marasmus. I thought I was getting some place on that until I had my interne look over the cases, and not a single case showed any special returns for our trouble, neither from the standpoint of general nutrition nor of anemia. I have come to think that intraperitoneal blood should be used largely for the anemia, and perhaps to give the child something with which to combat an infection. One must be careful in giving blood intraperitoneally in an infection.

I realize what I have said has been more or less elementary. I hope I may not have bored you too much by this talk.

DISCUSSION

H. M. McCLANAHAN, M. D., (Omaha): This address is too valuable to let pass by without some comment, and my comments are favorable.

I want to call attention to the differentiation he gave between pallor and anemia—pallor being due to some disturbance of the vaso motor nerves. In my own experience, I do not pay much attention to a baby because it is pale of skin, but I have thought the color of the lips and conjunctiva was important.

Another point he makes is that pediatricians as a rule do not get to see many new-born babes. They are kept away from us. We see them after they leave the hospital. Whether that is the best thing or not, I do not know. It may be the pediatricians know more about babies than the obstetricians. I am glad there is one obstetrician in the room—one of the younger men to whom we look for great things in future. I think the day will come when all new-born babies will be turned over to the pediatrician.

DR. GRULEE: I get all of them, and have for years.

Dr. McCLANAHAN: While Chicago is inferior to Omaha in most respects, it has some good points.

A thing I read years ago was that human milk contains a relatively small amount of iron. Yet the majority of babies are not anemic. When it was brought out that the idea the liver contained an excess of iron, we have had a valuable point. The doctor brought up the point the liver may contain an excess of iron. That is one of the most valuable contributions for the last twenty years.

His secondary anemias I believe are due to infection. I think that Dr. Billings in introducing the subject of focal infection has made the most advanced contribution in the last year. The criticism of the interne and physician is if we do not know what is the trouble with the patients, they have some focal infection. So it goes. Those who are getting older and decrepit as I am, there may be some truth in it. I am still here to tell the tale.

Here is Dr. A. B. Somers, who is eighty years old and still well. He is the dean of the medical profession in Nebraska—a man you should all know.

I think the pernicious anemia is a question of metabolism. I have looked in several dictionaries to find a definition of metabolism. I have not been able to get anything that entirely satisfies my mind as to what we mean. I think it is the most valuable word we have in medicine, because if we do not know, we can say it is a disturbance in metabolism, and nobody disputes the fact.

I am pleased to have Dr. Grulee with us. I have known him since he went into pediatrics. I remember in San Francisco years ago I thought I had a good paper. After I read the paper, Dr. Grulee told me there was nothing in it. I think perhaps he was right .

I disagree with our friend in St. Louis who said the place for infant stools was in the slop jar. I grant that, but I think it is a good idea to see the stool before you put it in the slop jar.

A. B. SOMERS, M. D., (Omaha): Since Dr. McClanahan has referred to me, I want to rise long enough to put myself on record on this matter. I think every new-born babe ought to go into the hands of a pediatrician.

W. RODGER MOORE, M .D., (St. Joseph, Mo.): I should like to ask Dr. Grulee a question. He spoke about the red count he had discovered in children who were anemic. Isn't this temporary count the result of dehydration?

What is there to this carrot anemia?

WILLIAM BERRY, M. D., (Omaha): I should like to ask if these indeterminate anemias he mentioned which occur shortly after birth have any relation to the anemia or deficiency of hemoglobin in the mother? Has there been any determination made in this work between that of the mother and the infant in these rare instances where babies are born with this indterminate anemia?

J. A. HENSKE, M .D., (Omaha): I should like to ask whether or not the diet they give the mother has any effect upon the so-called anemia of the new-born? Are the various drugs employed at the present time —the anesthetics—a factor?

DR. GRULEE, (closing): Pallor of the mucous membrane is an indication of anemia. I must say I have not been struck with that question as much as Dr. McClanahan states, but it is evidently more a sign of anemia than pallor of the skin. The thing that has impressed me is that frequently they have a peculiar yellow tinge and you can say, "That child is anemic." Look at another child just as pale and you say, "That is pallor." It is never right to make that differentiation until you get the blood.

Next is the question of the new-born. I should like to call the attention of the obstetricians to this: While the children over new-born age being in the hands of pediatricians in the last ten or twelve years have shown such a marked reduction in infant mortality that now only one child dies of gastrointestinal diseases where three or four died twenty-four years ago, during that entire period when the child has been in the hands of the obstetrician, there has been no reduction in mortality of the new-born. Maybe there is some argument in putting the new-born children in the hands of a pediatrician. Let him take a try at it. He cannot do any worse.

As I stated before, one does not know what the etiology of the von Jaksch's anemia is. Among the cases I have seen, we have been able to determine no evidence of infection. That it may be an infectious condition no one questions. But the answer is, "Where is the infection and what is it?" Nobody has been able to determine. I do not think there is any more evidence that the von Jaksch anemia is an infectious condition than that pernicious anemia is, and certainly not as much as that aplastic anemia is infectious.

It is frequently accompanied by quite a temperature curve, so that we do not know. Of course, the connection Dr. Moore meant to bring out was that these cases of high blood count with pallor were frequently cases of dehydration. That is just the point I meant to bring out. In these cases of marasmus, the vessels are contracted. There is little in the way of absorption. If you put blood into the abdomen in a case of severe marasmus, it takes a bit longer for evidences of that blood to disappear than in the ordinary child, even if in a severe state of nutrition from an infection.

When Dr. Hess came out with his carrotinemia, I breathed a sigh of relief. Mothers were coming to me with babies in a robust condition and saying, "What does this mean? My child looks yellow about the nose."

It was all explained when he showed that especially carrots, but also oranges and several other articles of food, produced a pigment which caused this yellow discoloration of the skin, especially about the face. All you had to do was to tell them, and things went along nicely.

As to congenital anemia, in all those cases I mentioned, the mothers had perfectly good blood counts and were not subject to anemia or hemorrhages. The child showed the anemia. The mother did not. That is the striking thing.

I cannot answer Dr. Henske's question as to the relation of drugs, of food, and of anesthetics to these cases. We have had the impression an anesthetic, especially ether, had some relation to the occurrence of hemorrhagic disease in the new-born ever since Dr. Evarts Graham's classical work in producing hemorrhagic disease of the new-born in guinea pigs by giving the pregnant mother a lot of chloroform. We do not know. Neither do I know of any connection between these anemias and the various drugs that have been given.

ORTHOPEDIC CLINIC*

KARL R. WERNDORFF, M. D.,
Council Bluffs, Iowa.

I shall present you today a group of patients —all three representing some interesting disturbance of the growth of the juvenile bone, and all three caused by the same etiologic factor; but all three different in their symptomatology and appearance. The first group I would classify as a delay of the osteogenic tissues.

Patient No. 1. This little boy came to me six months ago with a definite pain and swelling of his left foot, the examination showing considerable swelling of the scaphoid bone, with pain on pressure.

An analysis of these symptoms showed this: The child, always in good health before, since three or four weeks, complained of pain. No history of injury, deformity, or local inflammation. No suggestion of tuberculosis. Acute infection of bone was excluded recognizing there was no temperature and, in fact, the local condition of the foot contraindicated it. No signs of any contusion or symptoms of discoloration. On the other hand, we know that there exists condition of delayed ossification in the growing bone which is followed by symptoms very similar to the ones observed in this case.

The x-ray picture will illustrate that, (shows picture of normal and affected foot). The whole mass of the scaphoid bone is separated into several pieces. A comparison with the normal side shows the scaphoid bone smaller, especially visible in the lateral aspect. We have here a delayed ossification of the scaphoid bone. The boy had that disturbance a long time without any clinical manifestation. These conditions are probably caused by a disturbance of the endocrine function of the pituitary or thyroid glands, and often do not show any symptoms unless a trauma occurs; then the symptoms become evident and the delay of the ossification is recognized.

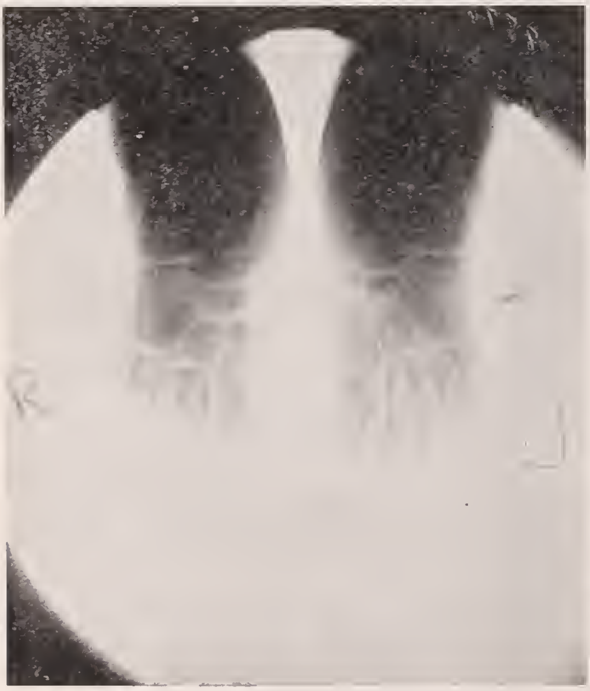

Figure No. 1. Left Scaphoid bone showing disturbances of ossification. Koehler's Disease.

Fixation of the bone in question by weight-removing methods—a brace which permits the patient to walk without putting weight on the affected part—and local application of heat or ultra-violet rays are therapeutical measures to be employed in these cases.

We all know of a similar disease in the epiphysis of the tibia—usually occuring between 13 and 15 years of age called Shlatter's disease, in which the x-ray picture shows a separation of the point of ossification.

Patient No. 2. The second group is characterized by what I should like to show in the next picture—a separation of the epiphysis of the head of the femur, (shows slide), note the epiphysis being separated and partly sliding downwards, the upper line of the neck shows a definite curvature proving that this process must have existed at least six months. The striking feature is the beginning separation and displacement in the epiphseal line. Without proper care it would develope to perfect separation and dislocation.

In 1910, we used to call that coxavara capitis. Dr. Lorenz published the first series of cases we observed. We thought it was some kind of a late rachitis with osteomalacic condition of the bone and a secondary separation of the epiphysis. I happened to observe a series cases of coxavara capitis, unusually tall, skinny, with knock knees and flat feet, and the absence of axillary

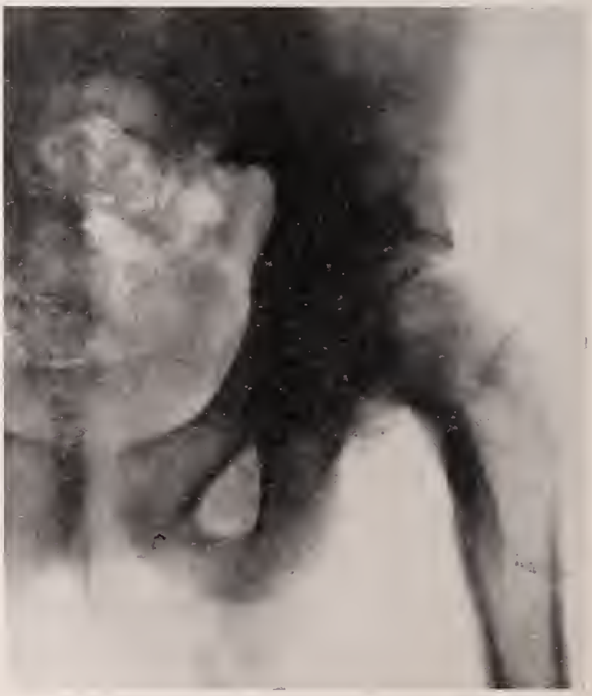

Figure No. 2. Displacement of separated epipbysis Coxavara capitis.

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*Presented before Missouri Valley Medical Association, Omaha, October 31, 1928.

hair. We spoke of the eunucoid type of coxavara.

The second series I observed, showed just the opposite symptoms: extreme general adipositas with an underdevelopment of the external sex glands, absence of secondary sex characteristics, absence of pubic and axillary hair.

In the last years we have learned more about the endocrine secretion and therefore must not hesitate to classify these cases as endocrine disturbances.

This boy, for instance represents an adipose, genital dystrophy. He is abnormally fat, has underdeveloped external sex organs, no pubic or axillary hair.

We must not be surprised to find disturbances of the growth combined with a lack of endocrine function, because the literature contains various analoga. We know for instance of the existence of congenital defects of the brain combined with disturbances of the endocrine function. The glands in question are the pituitary, the thyroid, the adrenal glands and the ovary and testicle. Manifold observations reveal the presence of even foetal endocrine influence, for instance the congenital myxeoedema, a congenital aplasia of the thyroid. Congenital defects of the brain are usually combined with an absence of the suprarenal bodies. Tumors of the cortex part of the suprarenel glands are followed with sex abnormalities, the hyperplasia of the cortex being associated with precocious sex development, the hypoplasia with infantilism. There exists a suparenel genital syndrome premature puberty, obesity, overgrowth of hair. Furthermore it is evident, that the pituitary gland has a definite influence on the sex development and growth, the anterior lobe controlling growth, and sex development.

The dystrophy of the anterior pituitary lobe causes gigantism if antedating the period of ossification. If this dystrophy develops in a later period in adults, we speak of the akromegaly of the skeleton.

Last, not least, I emphasize that the dystrophy adiposo genitalis, the so-called Froehlich type of infantilism is almost identical with the case No. 2, I demonstrated today, and many other cases, Lorenz and I published in 1910 as coxavara capitis. I do believe that a dystrophy in the pituitary gland causes the obesity, the genital hypoplasia and the delay of ossification in the epiphysis of the head of the femur, all due to endocrine secretory deficit.

Tandler and Gross in Vienna made very interesting observations on the Skopzen, a religious sect in southern part of Russia and Rumania who indulged in the peculiar custom of castrating their boys in a very early age. These boys all developed a eunucoid type very like the ones of coxavara I have mentioned before: unusually tall, skinny boys with a complete absence of pubic or axillary hair, flat feet, coxavara and knock knees.

Patient No. 3. Represents the third type of disturbances of the juvenile growing bone. His disease is known as Perthes' disease. He is limping and his hip is contractured in adduction and flexion. The x-ray picture shows the epiphysis of one head of the femur smaller, consisting of several parts. The epiphysis begins to slide off the neck, is protruding on the lateral side of the joint and gradually is dislocated. It looks as if the whole epiphysis would be compressed and squeezed out of the joint. The early stage of this condition, although very seldom observed, is shown in the next picture as an almost invisible light spot in the epiphysis. The pathology of that condition consists of a mollification of the bone of the epiphysis, which, microscopically, is proven to be a fibrous degeneration of the bone like the ostitis porosa of Recklinghausen. The mollification leads to a deformation of the epiphysis, separation and dislocation, absorption of bone and osteophytic production of new bone, in other words, it is followed by all the clinical and pathological manifestations of a deformant arthritis due to static conditions.

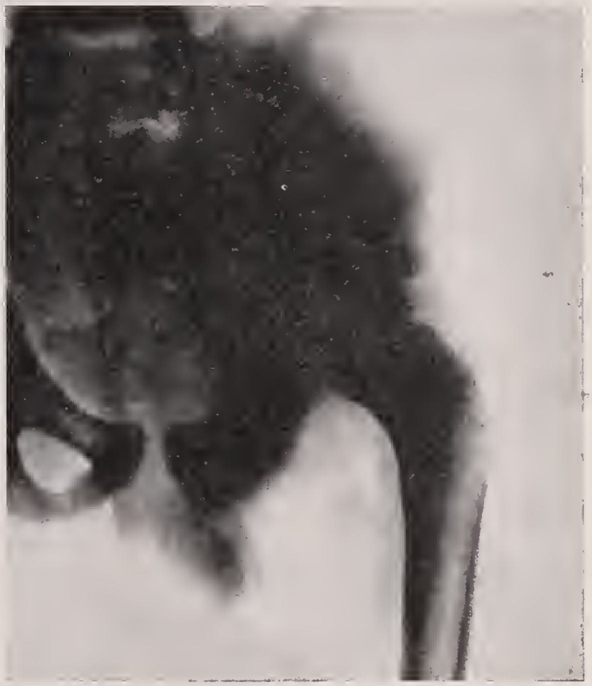

Figure No. 3. Perthes' Disease. Head of femur flattened, decreased in size; beginning separation of epiphysis.

Tumor of the parathyroid glands was found recently combined with the manifestation of a ostetis fibrosa, the excessive growth of the connective tissue undoubtedly being caused by a disorder of the parathyroid glands. The syndrome of the Recklinghausen disease ostetis fibrosa and sarcomatosis must be considered from the same point of view. The degeneration of connective tissue into fibroid tissue is the first step, the alteration into sarcoma tissue representing one more step in the degeneration. The sarcomatosis as a lower type of tissue develops on places which are exposed to more strain like the epiphysis and the points on the bone where the ligaments are attached. Dystrophy of the parothyroid gland causes the change of the morphyology of the connective tissue.

There is no doubt that parothyroid, pituitary and adrenal glands have a close relation with the sex glands and the sympathetic system. Their endocrine secretion influences the growth and the metabolism of the sympathetic nerve system; the thyroid and pitutiary especially influence the growth during the prepubic stage before the sex glands become active.

TREATMENT OF TUBERCULOSIS BY ALTERING METABOLISM THROUGH DIETARY MANAGEMENT. (GERSON-SAUERBRUCH METHOD.)

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(Second in a series of articles on surgery of the Thorax to appear in the Journal.)

Foreword: Dietetic management of tuberculosis may appear to be outside the realm of surgical considerations. It is included here because, first, a major portion of thoracic surgery deals with tuberculous conditions in which the diet under discussion has proved of great value as preoperative and postoperative management—second, because the author had an opportunity to study first-hand the methods adopted in the Y pavilion of the Sauerbruch clinic— and, third, because results of such management in both operative and non-operative cases of pulmonary tuberculosis in his hands and in the hands of associates in the Lincoln General hospital has been so favorable that further dissemination of the knowledge of this method of treating tuberculosis seems desirable.

In 1923 Adolf Hermannsdorfer began work in the Sauerbruch clinic at Munich on the problem of the influence of nutrition on the chemistry of the blood, and on the course of healing of granulating wounds.

The favorable results observed in healing of wounds by instituting a dietary management previously used for some time by a general practitioner, Dr. Gerson, led to the adoption of the method for the treatment first of lupus and later of pulmonary and bone and joint tuberculosis. The striking and rapid improvement in the lesions of lupus in cases that had resisted intensive treatment by x-ray, radium, and local medication under the supervision of the best dermatologists stimulated an intensive clinical study of this special form of nutritional management in all forms of tuberculosis. For this purpose a special pavilion was designated for this form of treatment. In these experiments the patients received no other form of treatment, no topical applications, and, therefore, the results obtained can be attributed only to the dietary plan adopted. The theory of this dietetic management has nothing to do with increased nourishment per se, but is based entirely on an altered metabolism which in some manner undetermined increases the resistence of the patient against the tubercle bacillus.

In lupus a form of tuberculosis very common in Central Europe, producing extreme loss of tissue and facial disfigurement, the results were decidedly favorable. The red weeping and extending ulceration of lupus which has resisted all forms of treatment for years, fades in color, dries up and eventually heals, leaving, of course, the defects caused by the disease. Under this management improvement usually is noticeable in two weeks' time, and complete healing is obtained within a few months to a year or more, depending on the extent of the disease. The results are quite uniform. Failure of relief is seldom.

The majority of cases were old resistant infections that had previously received all of the best methods of combating lupus. In some cases the nose had sloughed away, an ear or an eye had been lost. The disfigurement was extreme, but the activity, the inflammation and ulceration had disappeared leaving only the scarred defect. As yet no plastic operations have been attempted on these apparently cured cases. One interesting case of anal lupus showed a very great improvement in a part of the lesion while the remainder continued to present an indurated ulcer. Microscopic examination revealed a carcinoma which, of course, had not responded to the treatment. The influence of this treatment, however, was even more strikingly demonstrated by its ability to heal a lupus even in direct association with a carcinoma.

In bone and joint tuberculosis results with altered metabolism management were equally striking. No additional treatment was applied. The affected limbs were not splintered or placed in casts. A certain amount of restricted exercise was permitted and recovery took place often with preservation of the mobility of the joint.

Many cases of pulmonary tuberculosis are now under the same treatment. It is not so easy to determine the effect of a new treatment on concealed lesions, but the Sauerbruch clinic is convinced that the gain in weight and the course of recovery is more rapid than under ordinary rest in bed and forced feeding management. Patients requiring thoracic surgery, but who are not in condition to tolerate it are given a course of preparatory therapy in the pavilion.

The following brief case reports of patients treated in the "Y" pavilion at the Sauerbruch clinic are illustrative of the usual results obtained by this management.

1. S. T., age 51.
Lupus on ear and right forearm.
Onset 1915, further spread 1920.
Repeated treatment in dermatologic clinics—no improvement.
1-27-27—Admitted to Y pavilion.
6-15-27—Faded, healed.
Gain of weight 10.5 K. G.
2. Fraulein S., age 25.
Ulcerated lupus of face.
Onset 1916, on right cheek.
Treated since 1921 with radiation, cauterization, etc. No result.
Nov., 1926, admitted to Y pavilion.
6-1-27—Ulcer entirely healed.
Gain of weight 3.5 K. G.
3. Herr, P., age 16.
Ulcerated lupus of nose, upper lip, and eyelid.
Onset, 1923.
Treatment from 1923 to 1927 in Ophthalinic, Dermatologic and General hospital with irradiation, x-ray, etc. No result.
Admitted to Y clinic 2-6-27.
6-15-27—Lesion dried up, nearly healed.
Gain of weight 21.5 K. G.
4. Herr, T., age 40.
Lupus of right hand and head of metacarpal 2.
Onset, 1914.
Treated since 1919. Pulmonary T. B., 1924.
Admitted to Y pavilion 2-17-27.
6-1-27—Lupus healed. Ulcer healed.
Gain of weight 7.5 K. G.
5. Herr, W., age 37.
Peritoneal bone and muscle T. B. Very bad.
1924 Exudative pleurisy—1926 T. B. peritonitis.
Fistula on chin, right and left arms, right leg.
6-24-27—Spontaneous closure of seven fistulae. Peritoneal T. B. cured.
Gain of weight 27.5 K. G.

There were many other cases equally as striking. Most convincing were the lupus cases in which the lesions are superficial and visible, and in which the extensive defects although healed cicatrices were vivid testimonials to the former severity of the diseases. Pictures and colored models and the evident satisfaction of the patients was further substantiation of the efficacy of the treatment.

THE DIETARY MANAGEMENT

It is forcibly insisted at the Sauerbruch clinic that no other treatment is applied. As a clinical experiment it was desired to exclude any other possible explanation of the results. It is not considered important to overnourish the patient as the result obtained is attributed to the alteration in the metabolism and to the altered composition of the blood. In connection with the alteration of the metabolism by this diet as a part of the treatment of wound infection, elaborate experiments were carried out in blood chemistry and bacterial content of wound secretions.

The following principles are followed in the dietary management:

1. Table salt ($NaCl$) is excluded. Of course, in spite of extreme care the universality of $NaCl$ precludes absolute exclusion. However, the selection of food has been such as to limit the urinary output of $NaCl$ to .2 or .3 grams a day. If the output is greater, further restriction of salt containing foods should be made.

2. Substitution of mineralogen for common table salt. Mineralogen has the formula:

Aluminum potassium sulphate	$alk\ (so_4)$
Calcium phosphoricum	$cahpo_4$
Sodium salicicum	$na_2\ slo_3$
Magnesium sulphate	$Mg\ So_4$
Sodium sulphate	$Ka_2\ So_4$
Bismuth subnitrate	${}_4Biono_3\ Blo(oh)$
Calcium lactate	$(ch_3\ choh\ Coo)\ {}_2Ca$
Strontium sactate	$(Ch\ Choh\ Coo)\ {}_2Sr$
Albumin	$C_{72}\ H_{112}\ N_8\ So_{22}$
Sodium bisulphate	$Nahso_4$
Sodium bromate	$Nabr$

The exact proportion of these ingredients has not been published by the Sauerbruch clinic, but the prescription that I prepared has been used on many patients for a year with no inconvenience and with the desired clinical results. A heaping teaspoonful is given in water three times a day after meals. It is thought that mineralogen assists in elimination of the sodium chloride (i. e. demineralizes) in much the same way as potassium iodide aids in the elimination of mercury.

3. The nutritional foods.

3000 calories a day is taken as the maximum permitted. The number of calories permissible is calculated as 50 calories per kilogram weight per day. The results are not attributed to an over feeding regime but to the altered metabolism. Carbohydrates, proteid, and fat are given in the following proportion:

Proteid	Fat	Carbohydrate
1.5	2.7	3.7

This is relatively high fat diet and a low carbohydrate. High carbohydrate is thought to reduce the resistance against infection. The proteid is to be obtained chiefly in eggs as only 500 grams of fresh meat is permitted weekly. Milk and eggs constitutes a large part of the diet although vegetables are essential.

4. Give foods rich in vitamines. Fresh fruits and vegetables. Vegetables should be raw or little cooked.

5. Phosphorated cod liver oil. The vitamines in the cod liver oil are desirable.

6. Forbidden foods:
Common salt.
Pickles of all kinds.
Smoked and spiced meat.
Sausages and ham.
Smoked or salted fish.
Vinegar.
Maggi soup cubes.
Coffee, tea, cocoa.

7. Restricted foods:
Fresh meat (up to 500 g. a week).
Entrails (tripe, brains, liver, lights, kidneys, spleen).
Fresh fish.
Pepper.
Liebig's meat extract.
Beer ("Heilbier" or ale).
Malaga, red wine (with meals).

8. Permitted foods:

Milk—about 2-2½ pints daily in any form (especially raw milk). Also sour milk, milk cocoa, milk in pudding or rice, cream, kefir, cheese poor in salt, curds, potted cheese.

Butter—Saltless dairy butter.

Fruit of any kind, preferably raw, but also stewed fruit. Preserves, jam, fruit jelly, fruit juices, lemonades, cider, fruit wines, fruit salad, baked apples.

Salad and vegetables (little cooked). Vegetables are not to be boiled but only steamed. Also raw juice pressed out of vegetables as an addition to soup and other foods. Tomatoes, carrots, comfrey, potatoes, turnips, leeks, beetroot, asparagus, cauliflower, red and white cabbage, "sauerkraut", savoys cress, endive, lettuce, rhubarb, sorrel, spinach, peas, beans, lentils, mushrooms, cucumber, pumpkins, melons, parsnips, especially raw grated with sugar.

Flour of any kind, saltless bread, wholemeal bread. "Pumpernickel" biscuits, vermicelli, macaroni, pastries.

Eggs—Also in mayonnaise, puddings, broth, cakes.

Rice (unpolished Rangoon rice), semolina, maizena, tapioca, pearl barley, flaked oats.

Sugar—especially brown, sugar candy, genuine bees' honey.

Olive oil, lard (pork fat).

Spices—Free and varied use should be made of the following spices, in order to hide the lack of salt in the food: Glace, bonemeal, all herbs, marjoram, tarragon, fennel, borage, onions, especially pearl onions, peppermint, bayleaves, chives, caraway seed, lemons, parsley, celery, garlic, radish, horse-radish, pot-herbs, ginger, vanilla, cinnamon, anise-seed, currants, almonds, cocoanut, walnut, raisins, leek, yeast.

The following daily routine is rigidly enforced on all patients in the Y clinic. Only cases of severe pulmonary T. B. or cases with extensive bone and joint tuberculosis are kept continuously in bed. No fixation apparatus is used in the latter cases, and a reasonable amount of exercise is encouraged. The routine, however, imposes a considerable amount of rest hours.

6:30-7:30—Temp., pulse, resp. record. No one arises before this.

7:00—Phosphorated cod liver oil taken in room.

8:00—All patients must have finished morning toilet.

9:00—Breakfast—Mineralogen. After this, if ambulatory, can walk outside.

10:00—Fruit (to be taken in the room).

10:00-11:00—Rest in bed.

11:00-12:00—Take a walk.

12:00—Luncheon, fruit, mineralogen.

1:00-3:00—Rest in bed. Must not speak, read, or eat.

3:00—Take a walk.

4:00-5:00—Rest in bed. At 5:00 beds that are kept out doors when possible from 9:00 to 5:00 are returned to rooms.

5:30—Pulse, temperature, resp.

6:00—Dinner, fruit, mineralogen.

7:00-7:30—Take a walk.

7:00—Phosphorated cod-liver oil.

8:00—In bed.

9:00—Lights out.

Perhaps some variation in routine may be expedient, but the general principles of this management can be carried out in any hospital and even in the home.

This dietary management does not require the abandonment of the over feeding regime usually practiced. It may be that the insistence on salt modification has not the importance attributed to it. The results in the Y pavilion, especially in cases of lupus, however, are indeed convincing, and the plan in exact detail deserves careful and painstaking trial.

In the Lincoln General hospital this dietary routine has been adopted under the title "Munich diet" and the procedure as to rest in bed and graded exercise is varied and directed according to the condition of the patient.

I have had under this dietetic management over a period of 12 months a series of 10 cases with such striking results as to rapidity of gain in weight, cessation of sputum and cough and recession of temperature as to warrant this report. In two cases apparently moribund in the beginning there was added to the dietetic management after a preliminary improvement was obtained a phrenicotomy in one case and a phrenicotomy and complete thoracoplasty in another.

A tabulation of the clinical features and results obtained in five cases treated by this method is given below:

	Previous to Instituting Treatment						After Six Months of Treatment							
Case	Duration of Disease	Sputum Amount cc.	Tubercle Bacilli	Afternoon Temp.	Weight	Ambulatory	First Mo. Gain in Wt.	Sputum Amount cc.	P. M. Temp.	Ambulatory	Tubercle Bacilli	Wt. After 6 Mos.	Persistence of Cough	General Condition
1	1½ yrs.	300	++++	103	135 lbs.	—	15 lbs.	25	99	+—	+	160 lbs.	Slight	Improved
2	2 yrs.	200	++++	103	95 lbs.	—	10 lbs.	5	99	+	—	147 lbs.	0	Apparently Arrested
3	3 mos.	10	—	100	100 lbs.	+	16 lbs.	0	98	+	—	135 lbs.	0	Arrested
4	6 mos.	20	+	100	120 lbs.	+	20 lbs.	0	98	+	—	156 lbs.	0	Arrested
5	3 mos.	25	+	101	140 lbs.	+	15 lbs.	0	98	+	—	160 lbs.	0	Arrested

It may be stated further that the Munich diet has become in the Lincoln General hospital almost the routine medical management of tuberculosis by members of the staff. Dr. J. M. Mayhew, chief of staff and head of Department of Internal Medicine, and others in that department report very favorably on it. It is being used in the urological department in various forms of urinary tuberculosis. I have used it in all cases of tuberculosis of the chest and pleurae in which I have performed one or more of the surgical procedures indicated in cavernous tuberculosis. It is not, of course, looked upon as a sure cure for tuberculosis nor with unreasonable enthusiasm, but the consensus of opinion is that the Munich diet distinctly favors improvement in tuberculosis.

RADIOLOGY OF THE GALLBLADDER*

EDWARD W. ROWE, B. Sc., M. D., F. A. C. R.,

After hearing, on this platform, eminent men like Drs. Rowntree, Ivy and Mann, it may seem presumptuous for me to present a paper on any phase of gallbladder function or pathology. But we all have our own fields of activitiy and I propose to speak more upon the practical application of the theories proposed. Radiology of the gallbladder is an application of research to clinical medicine. Modern science demands one hundred per cent infallibility. No excuse is permissible until the goal has been attained.

To the student of medical history the development of cholecystography presents a colorful tale. Before the advent of gallbladder visualization roentgenology had attained a high degree of accuracy. It was ready for the application of the work of Dr. Graham and his co-workers. No new developments were necessary as in the introduction of the problems that arose in pyelography, cardiography or the barium meal.

Buxbaum of Karlsbad, in 1898, first demonstrated gallstones in the living body. At first gallstones were not considered demonstrable. France and Germany conceded to this early viewpoint. A calcified gallbladder was occasionally found and reported to be evidence of cholecystitis. The intensive study of the alimentary tract by Case, Pfahler, L. G. Cole and George led to the discovery and description of the so-called indirect signs of gallbladder pathology, which led to the opinion, for a time, that these were of even more value than the direct demonstration of gallstones, because they were found more often. Further technical improvement created refinement in roentgen technique, which gave a higher per cent in the demonstration of calculi. But roentgenology, at its best, varied in the reports of demonstrable gallstones all the way from 25 to

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*Read by invitation before the Omaha-Douglas County Medical Society, November 27, 1928.

75 per cent, with the average competent worker falling about half way between these extremes. Nevertheless, the period which closed just before the advent of cholecystography saw a high development of the art of diagnosis by roentgen ray, by Holland and Knox in England, Haenish on the continent, and L. G. Cole, George, Pfahler, Case, Kirklin, Arens, Mills and others in America. We may well be proud of the manner in which our own roentgenologists have followed up the discovery of cholecystography.

A new era in diagnosis, probably unparalleled since the application of roentgen rays to medicine, has been opened. It has been claimed that cholecystography is "the most valuable single diagnostic method in gallbladder disease". (Eusterman). Operative confirmation of the roentgen reports has been the rule. Graham, in a survey of the literature, summarized:

The percentage of correctness in 446 cases of all authors with a diagnosis of pathological gallbladder	97.8
The percentage of correctness in 115 cases of all authors with a normal gallbladder	74
The percentage of correctness in 380 cases of all authors by intravenous method	95
The percentage of correctness in 181 cases of all authors by oral method	89

In addition to the highly developed skill in demonstrating positive calculi we have:

(1) The demonstration of negative stones;

(2) The discovery of indirect signs,—adhesions, seats, distortions, displacements of hollow viscera; and

(3) The visualization of the gallbladder function.

The test of the function of the gallbladder is the real test of its efficacy to perform its work or to show how it is hindered by disease. Artificial media in other organs is used to demonstrate the physical state. This is the first time a media has been used to demonstrate physiology, and by it, by inference, the pathology. To. Drs. A. E. Graham and W. H. Cole (*Journal Am. Med. Assn.*, in 1924) must be given the credit for conceiving the idea of determining the pathology by a control media showing function. Liver function by the employment of dyes was measured by Rowntree and others but Graham applied the functional test of a contrast media to roentgenology.

The physiological principles of cholecystography are beyond the scope of this paper. But it is noted that Dr. Ivy goes further than Dr. Graham and proves that the gallbladder in the dog and cat, at least, contracts; also that there is in the intestinal mucosa a highly purified extract which brings about gallbladder contraction, or a hormone which controls the tonus of the gallbladder. The gallbladder does not contract like the stomach and intestines, but its contractions are more like those of the urinary bladder than any hollow viscera.

Suffice it here to say that the dye is taken up in the portal circulation by intestinal absorption, or that it is introduced directly into the venous circulation. It is excreted by the liver, reaches the gallbladder in small but increasing quantities, mixes with the bile there present, and becomes concentrated to the point where it makes the vesicle opaque to the roentgen ray. In normal cases the time depends on the quality and frequency of food intake. The mixture of bile and dye in the gallbladder gradually disappears, and in twenty-four hours it disappears entirely. There is a regular cycle for the behavior of cholecystographic media and, hence, roentgen examinations are predetermined. By adapting methods to the usual sequence of food intake and abstaining from it, and by the use of the fat meal to advance the emptying time, a more prompt and efficient technique has been set up for the study of the gallbladder and its function.

Cholecystographic techniqce is exacting and requires the highest order of art. The masters have their variations but the principles are the same. We speak of standard technique. This is true but only in the application of the principles. Many variations in methods are employed. Immobility of the patient, rapid exposure, proper position, exacting technique to bring out the greatest detail and contrast, are the main technical principles. The patient is usually prone, but occasionally the upright position is the only one the patient can assume.

Preliminary preparation of the patient is not necessary. Preliminary roentgenograms are taken on the first presentation of the patient. The dye is given intravenously or by mouth after a light supper. The next morning, after a night of fasting, roentgenograms are again made of the gallbladder area, when the gallbladder shadow should be at its maximum size and density. Then a barium meal may be given, if a complete gastrointestinal study is to be made; or the patient may be sent out to partake of a breakfast, with ample provisions for cream, eggs, and fat high articles of diet. After another interval of four or five hours the gallbladder area is again roentgenographed and the gallbladder shadow should be gone. This is all. The more the test is used, the simpler it becomes.

Of forty-eight chemical compounds studied by Graham, thirteen produced cholecystograms, four were practical, and but two were found to be satisfactory. Sodium tetraiodophenolphthalein is the most widely used. Graham prefers its isomer because it causes fewer reactions and because it colors the blood stream and may be used for testing the liver function also. But its cost is yet too great. The lethal doses of these compounds have been carefully studied. In animals there is a margin of safety of 7 to 1. As employed in human beings there is greater safety, because only one-fourth as much is employed. 0.2 gms. per kilo body weight in animals produces no pathologic change, so it is improbable that any evidence of hepatic damage will ever be found. There has been waged a warfare between the preponents of oral administration and those of the intravenous methods. By either method the results obtained are nearly equal. Later summaries have given even less than five per cent preference to the intravenous method. Gradual refinements of interpretation and technique have established criteria of diagnosis which have yielded an accuracy of 95 per cent. Scarcely any laboratory or clinical procedure exists which can offer so nearly 100 per cent. The choice between methods is largely a personal one. It is important to adopt a method and to perfect a technique and then to grow familiar with the interpretation. It may lead to confusion if first one method is used and then the other. If there is no gallbladder shadow, every step in the technique should be checked. It is well to repeat the test if there is a doubtful history and no physical findings. With an established routine few mistakes occur.

The technique for the intravenous method is more elaborate and demands more exacting skill. Abroad, and with numerous workers at home, including Graham, it is the method of choice, but by far the greatest number are given intraorally. The test is usually left to the roentgenologist, who hesitates to employ the intravenous method out of deference to the referee or he may be unfamiliar with intravenous medication. Most cases are ambulatory and the test is adapted to office practice. Dr. Kirlin now goes on record as saying (*Radiology*, p. 67, July, 1928): "Should like to go on record as being somewhat prejudiced to the oral method for the following reasons: In the first place it is much simpler to give and entails less risk to the patient, for general use; in the second place, it is not necessary to hospitalize the patient, which lessens the responsibility of the examiner, and, therefore, the expense to the patient; thirdly, it is my opinion that the results are at least within one or two per cent as reliable with the oral method as with the intravenous."

Dr. Case, on the other hand, has persistently used and defended the intravenous method. He finds no difficulty and that but few reactions occur. If the intravenous method is used the care in preparation of the solution cannot be too exacting. If reactions are to be avoided, the instruments must be re-sterilized as well as the solutions and no chemical such as lysol should be introduced by the handling of the parts of the syringes.

Physicians are greatly concerned with the safety of the test. One well known manufacturing chemist has a record of 100,000 cases and no serious results. Dr. Graham (*Wkly. Bul. of St. Louis Med. Society*, April 8, 1926), says:

> Another point I am sure is in the minds of all of you concerns the danger. We happen to have personal knowledge of the application of this method in approximately 15,000 cases in various parts of the world. We have heard up to the present time of no authentic instance of any death whether from intravenous use or oral administration. It seems an astonishing thing that there have not been some deaths recorded in the literature because I confidently expected that when a method involving an intravenous procedure was put into the hands of Tom, Dick and Harry throughout the world there would certainly be some deaths. I have heard indirectly of one or two deaths supposedly due to this procedure, but on tracing down I have found they were false alarms. I will mention two instances.
>
> One was a case reported before the Western Surgical Society of an individual who received an intravenous injection of tetraiodophenolphthalein. Ten days later he was operated on; his gallbladder was removed, and three days later he died. Death was ascribed to tetraiodophenolphthalein. Another case was in New Orleans, a cardiac case, who came to the out patient department and was given an injection by mistake; that is two patients were mixed up. This cardiac case got an injection of tetraïodophenolphthalein. He had a decompensated heart lesion at the time. There was a violent reaction but after a few hours he got up and went home. He reported back at the out patient department six days later, and while waiting to be called for examination he suddenly dropped dead. This death was also ascribed to tetraïodophenolphthalein. There was no postmortem and I believe it rather flimsy evidence upon which to ascribe death.

This was written in 1926. Since then the purity of the drug has been improved and fewer reactions occur by either method of administration. In the last 619 cases to whom the sodium tetraiodophenolphthalein was given intravenously by Graham there was not a severe reaction. The number of reactions was reduced 50 per cent. Reactions run about thus: In 75 per cent, none; in

20 per cent, slight nausea, backache or diarrhoea; in 5 per cent, more severe degree of vomiting or diarrhoea, but nothing of a serious nature occurs. Dr. Case has advocated the use of adrenalin in patients, showing allergic reactions, such as asthmatic attacks. Dr. Case finds that only 10 per cent of his patients show any reactions. Dr. Stewart of New York avoids reactions by a specially coated Keratin capsule.

The test has been given to the very young as well as to the old. The youngest in Dr. Graham's series was 27 months old. The contraindications to cholecystography are few. Cardiac decompensation is the only positive condition in which a slight shock added to the load might push the patient over. Passive congestion in the liver itself might cause retention and prevent the entrance of bile into the gallbladder and, hence, give no shadow. Patients suffering from cholangitis, cirrhosis, and carcinoma with jaundice do not seem to have any more reactions than others. Even yellow atrophy has been present without undue reactions. A patient with acute liver infection or common duct obstruction, should, of course, be cautiously treated. Great variations in blood pressure and threatened uremia may be cause for rejection. In the pregnant state and the puerperium no difficulty has arisen from those conditions themselves. The vomiting of pregnancy may defeat the purpose of the test by early and rapid emptying. There is no injury to the mother or fetus. Levyn, (*Radiology*, July 28, p. 66).

In the interpretation of cholecystograms the following general considerations are of great importance:

1. The location of the gallbladder;
2. The relations of the gallbladder to anatomical landmarks and other viscera;
3. The contents of the gallbladder;
4. The outline or form;
5. The capacity or size, and
6. The time factor.

The normal gallbladder assumes the position in the abdomen corresponding to the habitus of the patient. In the stout, hypersthenic person it may be high under the costal arch, and in the asthenic individual low. It has been found as high as the 9th rib and as low as the true pelvis. It follows the abdominal viscera, particularly the liver. Its relation to other organs varies according to the position in the abdominal cavity. The gallbladder should be evenly and completely filled. Gross defects mean, as a rule, inflammation, stones, tumors, congenital defects, or adhesions. The contents are bile mixed with dye and, hence, the shadow should be homogeneous. Habitus and tonus play an important part in determining the shape and size. There can be large and small gallbladders just the same as large and small noses. However, gallbladders are much more constant in size than one would gather from reports of cholecystograms. The size is determined more by the health of the digestive tract and by the tonus of the individual than by any other factor. The rate of filling and emptying of the vesicle in the normal individual is constant, except for variations found in the different types of habitus.

The cholecystographic criteria of the pathological biliary tract are well defined and generally agreed upon. Some workers may arrange them differently in giving to them places of importance. Practically all head the list with: (1) Non-visualized gallbladder; (2) faint visualization and delayed function follow as showing degrees of pathology interfering with function; (3) deformities of the gallbladder are more common than might be supposed and may be congenital or acquired; (4) gallstones appear opaque or non-opaque. Opaque stones have enough calcium content so that their shadows are visible on the preliminary films. The non-opaques are mostly cholesterol and have insufficient calcium content to be visible unless the dye has been given. If a gallbladder shadow is obtained the stone appears as a dark shadow within the white gallbladder shadow, due to greater radiolucency of the cholesterol. Opaque bile surrounds the non-opaque stone and visualizes it by contrast of shadow. If many stones be present, mottling or a honeycomb shadow may appear. Even a solitary stone of this structure gives a characteristic darker shadow. If the cystic duct is closed and no bile enters, the non-opaque stones are overlooked. Such calculi are more easily recognized on the cholecystograms, when the concentration of bile is greatest.

Failure to visualize the gallbladder or "no shadow" may be caused by: (1) Any obstruction of the cystic duct from any intrinsic or extrinsic cause that prevents bile from entering the gallbladder. Stone in the cystic duct is the most important cause; (2) various stages of inflammation from edema (Lyon, Trans. Am. Gast-Ent. issue, 1927, p. 224) to stricture and atrophy may prevent visualization; (3) extensive disease of the liver impairing its function, conditions producing jaundice, or acute abdominal disease, may, at times, prevent gallbladder visualization; (4) inability of the gallbladder to concentrate when the bile enters it is usually due to varying degrees of inflammation; (5) partaking of food may account for "no shadow" and should be carefully avoided. If in doubt, repeat the test. Standardization is imperative. With good technique pitfalls are not common. "No shadow" means pathology of high degree. Deformity of shadow due to pathology means adhesions and usually stones are present. A gallbladder buried in adhesions may give apparently normal cystograms, but usually, careful study will reveal irregularity of surface outline, sufficiently plain to be recognized, or displacement and fixation. Films in prone and erect positions help to differentiate. Pressure defects are deceptive and valueless. Anomalies, sacculations, angulations and inversions are picked up as diagnositic skill develops.

It requires extensive experience to judge correctly the cause of faint and delayed shadows. An opinion should not be given until the technique has been carefully checked. Ascites, obesity or high location may confuse one, but various degrees of inflammatory disease usually contribute to the faintness of a shadow and indicate pathology. The hope of early detection of cholecystitis depends upon the interpretation of faint shadows. A delayed gallbladder shadow often persisting for, from 24 to 36 hours, is a fairly reliable indication of an advanced cholecystitis and we may infer that pathology causes the interference. Surgical findings have repeatedly confirmed this deduction. The late appearance of a shadow is a rare finding, but, in almost all cases, it means pathology. A good, dense gallbladder shadow has, nearly always, been found to be a normal gallbladder.

The principal application of cholecystography lies in the detection of inflammation. Inflammation is always present in cholelithiasis, so the latter is included in the inflammatory state. Even parasitic infestation of the gallbladder will present some degree of inflammation causing interference with concentration of the dye or preventing visualization. Cholecystography has done little in determining the presence of tumor of the gallbladder and carcinomatous gallbladder, because such, probably, will never be differentiated from inflammation.

Kirklin (*The Normal Cholecystographic Response, Rad.*, July, 1928), says:

> "While the gallbladder is believed to be sensitive, its behavior in cholecystograms, as observed in this series (25 cases) is apparently seldom affected by duodenal ulcer, chronic appendicitis, pelvic lesions, and many other diseases of the abdominal organs".

Skinner and Lockwood have shown in a series of 1,500 cases, with only 12 per cent hospitalized that:

1. In pernicious anemia, 70 per cent showed pathologic gallbladders with 39 per cent showing stones;
2. In myocardial degeneration, 71 per cent showed gallbladder pathology and definite electrocardiographic findings:
3. There are cases of myocardial degeneration with gallbladder symptoms but normal cholecystographic findings;
4. Cholecystography reveals another focus of infectious arthritis. In the cases of infectious arthritis, 69 per cent showed pathologic gallbladders, with 15 per cent showing stones.

Here is a group of diseases which have a direct bearing on cholecystitis, but generally such conditions themselves receive primary attention. The gallbladder should always be considered as a possible source of disease. With the approach to standardization in technique and the criteria used in interpretation, a plea is made for further information in the report of conditions.

Case recommends the following terminology for use in reporting the findings of the Graham test:

1. "Stone Positive". Stones may be reported on preliminary films without the use of the dye, or afterwards when positive stones are made more certain or negative stones are determined;
2. "Absence of Shadow". This has a definite and grave significance when the technique has been carefully checked;
3. "Normal", when the gallbladder outline appears with normal contours, or normal uniform density, without filling defects, and empties within the normal time, having almost, if not completely, evacuated the dye within three hours following the ingestion of the fatty meal.
4. "Pathological, non-calculus". Which includes all cases not falling under the above three. It includes those faulty in density or in uniformity, or irregular in contour, or a combination of these findings. (Case, Rad., July, 1928).

In conclusion, it is important to realize that the accuracy of cholecystography depends mainly upon the amount of experience with the interpretation of a known system of rigid technique. A goodly number of cases of gallbladders do not require the test. The early cases often yield high accuracy and benefit to the greatest extent, by prompt surgery or even medical and dietary attention. The so-called "silent" cases with slight or no suggestive symptoms are definitely lifted out of the darkness of the unknown, and many doubtful cases are placed safely in the known. The test is of greatest value in those cases with varied abdominal complaints, because autopsy reports as well as abdominal laparotomies show that many gallbladders are overlooked. As in other fields of diagnosis, a procedure of high accuracy has not removed the necessity of a careful history or a painstaking examination.

In the diagnosis of gallstones, one of the three criteria of roentgen signs will be present. (*Case. Radiology*, July, 1928).

1. Stones visible by x-ray without the Graham test;
2. Stones visible by negative shadows in cholecystograms;
3. Failure of gallbladder to visualize after Graham test.

These should give a per cent of accuracy of at least 95.

As a functional test, just as high accuracy may be expected. Whenever the function is markedly disturbed there is serious pathology. The average clinician has added to his armamentarium a possible means of increasing the accuracy of diagnosis not equalled in other fields.

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LATENT MASTOID INFECTIONS IN INFANTS

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The subject of latent mastoid infections in infants is of general interest because of its association with various types of gastroenteritis. The condition was first brought strikingly to my attention when on doing dissections on the mastoids of infant cadavers in Vienna, 1925, I found two temporal bones in which the mastoid cavities were filled with frank pus. In each of these, gastroenteritis had been assigned as a cause of death and the otitic infection entirely overlooked.

The aural symptoms are usually slight. The gastrointestinal symptoms may be mild or severe. In the mild type, the infant does not appear acutely ill. There is loss of appetite with loss of weight and a slow onset of malnutrition. Listlessness is usually marked.

In the severe type there is vomiting, distention, and diarrhea, with a rapid downward course. There may be no elevation of temperature. Death usually occurs in from two to fourteen days.

The diagnosis is made by the presence of the above noted symptoms and the appearance of the tympanic membrane. The drum membrane is always thickened and dull. If there is no redness present, there is always congestion of the vessels at its periphery. There is usually some fullness postero-superiorly. The intense redness, with exfoliation of superficial epithelium present in the usual acute otitis media, is not seen. There is no mastoid oedema or redness, and little if any tenderness.

The anatomy of the middle ear and its drainage may partly explain the occurrence of this condition. The middle ear cavity is one of the few structures of the body that is almost as large in the infant as in the adult. In proportion to body weight, the infected middle ear cavity of an infant will secrete far more than that of an adult and, owing to the widely open Eustachian tube, will discharge relatively far more into the pharynx and into the oesophagus. It is not possible to determine if the gastrointestinal symptoms are caused by the swallowing of the pus or by its absorption into the general circulation. Certain it is that this constant ingestion into the stomach must at least be a factor.

It is of importance to remember that the ear infection may be secondary or terminal and not primary to the gastroenteritis. In the one case in my series to be sectioned microscopically, the otitic infection was far more recent than the gastroenteritis and was undoubtedly terminal. Such observations have been noted by others.

That the condition may be primary is attested by the immediate subsidence of symptoms and rapid improvement following operation in five cases.

The following history is typical:

Baby A. F., age 11 months, was first seen November 10, 1927. The chief point in the history was that of loss of appetite and weight of 3 months duration. At 8 months, the weight was 17 pounds, on examination 14 pounds.

Examination: The left ear drum was thickened, dull and congested. There was definite fullness superiorly. There was no mastoid swelling or tenderness.

The diagnosis of a latent mastoiditis with secondary gastroenteritis was made. Under local anaesthesia, the left mastoid antrum was opened. It was filled with grey pus and contained a few sluggish granulations near the aditus.

The postoperative course was noteworthy for the immediate resumption of appetite and the rapid gain in weight.

On the other hand, I have operated upon two infants with the severe type of gastroenteritis in each of whom the operation served nothing but to hasten death. These two patients were either not operated early enough or the otitic infection was secondary. Each of these patients was operated because there seemed nothing else to do—always a poor surgical indication.

The operation on the infant is performed under local anaesthesia and is a simple procedure. I do not wish to conclude this paper, however, without a protest against the indiscriminate opening of normal mastoid and middle ear cavities upon gastrointestinal symptoms alone. Such a protest would seem superfluous were it not that such a course has been openly suggested and only too frequently pursued. The mastoid antrum of the infant normally contains a yellow gelatinous embryonic tissue that should serve purposes other than that of being mistaken for pus and soothing a surgeon's conscience. The finding of pathogenic organisms in the mastoid antrum without structural evidence of pathology does not warrant the assumption of an infection. Their presence may be accounted for by the relative patency of the Eustachian tube and the adenoid tissue surrounding it and in its lumen. In one of my specimens, there is adenoid tissue throughout the length of the tube.

The presence of a latent mastoiditis should be considered in every case of gastroenteritis in infants. Its proper diagnosis and treatment will result in the relief of a number of these obstinate if not fatal conditions.

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SUPRARENAL HEMORRHAGE*

Clinical and Pathological Presentation of One Case

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Hemorrhage into the suprarenal gland was first mentioned in 1837 by Moissenet and Rayer. In 1902 Simmonds(1) described the condition at length. He found small hemorrhages common in the course of diphtheria, typhoid, osteomyelitis, and sepsis, and considered them of toxic origin. Gross bleeding was rare. He saw only one case where he thought death was due to actual hemorrhage, and autopsy two days after onset of sudden epigastric pain revealed hemorrhagic infiltration of both suprarenals. Symptoms in some cases were absent, yet the condition proved fatal. Some cases presented convulsions and signs of peritonitis, while others resembled Addison's disease. Simmonds considered that many bilateral hemorrhages were antemortem, without symptoms or clinical significance. In his series, thrombosis of the suprarenal veins was considered causative in seven cases, while in four there were bacterial emboli. In no case did surgical treatment relieve the condition.

Other causes of suprarenal hemorrhage are anemias or other blood diseases, venous obstruction, trauma, and asphyxia. The last mentioned is apparently operative in many of the not uncommon hemorrhages of the new-born. Mattei's(2) statistics of necropsies on fetuses and new-born showed that hemorrhage was common. Microscopically it was almost constant. The vascular changes varied from hyperemia to extensive interstitial hemorrhage, usually in the reticular zone of the cortex, where the blood supply is rich. The hemorrhage may be extensive and break through into the retroperitoneum, peritoneal cavity, or even into the lumbar muscles. Bilateral are more common than unilateral hemorrhages, and female, marantic infants are more often affected. Eclampsia was present in some mothers.

Not all hemorrhages into the suprarenals of new-born are due to asphyxia, however. Simmonds(1) found septic thrombi in the suprarenal veins of three cases. Tupffer(3) found a thrombus in the medulla in one of his cases. In still others staphylococcus aureus and albus, and B. Coli have been recovered from the blood and tissues. Experimentally intravenous injections of

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B. Coli and *B. Diphtheria* have been shown to produce engorgement of the suprarenals. Another possible cause of such hemorrhage is compression of the vena cava by the liver, with effusion of blood into the suprarenals.

It is doubtful if there is a uniform causation of suprarenal hemorrhage, although trauma and asphyxia are the most common causes. Trauma and compression at birth amount to generalized asphyxia.

The course after hemorrhage in the new-born is variable. Often death occurs rapidly, without any demonstrable physical signs. In general, symptoms are those of internal hemorrhage, with rapid, shallow breathing and rapid pulse. Sometimes there is a palpable tumor mass, pressure symptoms, and even intestinal obstruction. If on the left side in males, the left spermatic vein may be compressed, with swelling of the scrotum. Corcoran and Strauss(4) report a case where the hemorrhage compressed the descending colon with resulting intestinal obstruction. Operation was performed and recovery followed, the only recovery in about 100 cases recorded in the literature.

The experience of J. R. Losee at the New York Lying-In Hospital Pathological Laboratory, with suprarenal hemorrhage in the new-born, is of interest. This observer, quoted by Farr and Semsroth(5), examined 196 stillborn and new-born in 1924, and saw nine suprarenal hemorrhages. In 219 autopsies in 1925, there were twelve. In some cases the capsule of the gland was distended. In only one case, where the hemorrhage was bilateral, was death thought to be due to the hemorrhage, and in this one instance the symptoms were cerebral.

Rabinowitz(6) reports two cases of hemorrhage in infancy, excluding those of the new-born and those due to sepsis, burns, definite infections, trauma, leukemia, or hemorrhagic diathesis. The infants were seventeen and eighteen months old, respectively. In each case the child became acutely ill, and in a few hours there were petechiae over the body. The relation to the purpura is not clear. At autopsy there was found hemorrhagic infiltration of the cortex and medulla of both adrenals, the only important findings. Rabinowitz points out that this condition is more frequent than hitherto reported, being unrecognized because of non-familiarity with the clinical picture and failure to secure autopsies. The babies vary from two months to two years of age, are usually breast-fed and previously healthy and thriving. It is suggested that an unknown toxin acting on the blood vessels of the skin and suprarenals, allows the blood to pass into the tissues.

Gross bleeding into the suprarenals in adults is quite rare. Faar and Semsroth(5) report such a case in a man complaining of abdominal pain of two weeks' duration. Autopsy revealed a suprarenal apoplexy, thought to be due to infection, because of marked leucocytic reaction. The present report deals with a large hematoma in an adult, recorded because of its rarity; it is the only one observed in nearly 1000 autopsies at St. Joseph's and Douglas County Hospitals.

CASE REPORT

A white polish laborer of fifty years was brought to St. Joseph's hospital, Oct. 22, 1926, by the emergency ambulance. He was seen immediately after admission by Dr. M. E. Grier, on the emergency service, and by Drs. F. W. Heagey and T. L. Houlton. Although mentally confused, he persistently complained of abdominal pain which he could not localize. He was disoriented for time and place, and not cooperative. He talked continuously and wanted to get out of bed and go home.

Physical examination showed a moderate general icterus, pain and tenderness over the right upper abdominal quadrant, distension and tympany, and a foul breath. Pyorrhoea alveolaris was extreme.

Neuropsychiatric examination by Dr. T. L. Houlton revealed no neurological findings of importance.

The urine contained a trace of albumin and a trace of bile on several examinations. The white cell count was 17,200 on admission, with 91 per cent polymorphonuclears. The next day it dropped to 10,850, with 95 per cent polys. There was a secondary anemia, with 3,080,000 red cells and 60 per cent hemoglobin. The urea nitrogen was 21 mgms. per 100 cc of blood. The Van den Bergh test was positive, with 1.56 units of bilirubin present. The icterus index was 21. Bile was present in the stools. The spinal fluid obtained by lumbar puncture was colorless, contained a trace of globulin, 5 lymphocytes per cu. mm., gave a Lange curve of 1-1-1-2-0-0-0-0-0-0, and was negative to the Wassermann test. The blood was likewise negative serologically.

The only item of interest in his past history was an injury to the right thigh, in August of 1925, when he came to St. Joseph's hospital and a hematoma of the thigh was removed. It was noted at that time that the history was difficult to obtain.

Course: He continued to complain of severe abdominal pain, but there were no more definite physical findings. His mental state improved only slightly, and he manifested suicidal tendencies. At times he sat up in bed gasping for breath. The abdominal pain at times caused him to scream and required morphine. He died Dec. 1, 1926, 40 days after admission.

The final clinical diagnosis was toxic psychosis, due to oral sepsis, cardiovasculo-renal disease, and subacute cholecystitis.

Anatomic diagnosis (B. C. R.)—Marked hypertrophy and dilatation of left cardiac ventricle; chronic calcifying aortic endocarditis (anterior cusp); cardiac decompensation with hydrothorax, bilateral and chronic passive congestion of spleen and kidneys; passive congestion of cecum, ascending colon, and small intestine, with ecchymoses in lining of ileum and urinary bladder; large hematoma of right adrenal; cholecystitis, chronic, with stenosis of gallbladder outlet and division of gallbladder into two cavities; cholelithiasis; fibrous epicarditis; slight arteriolar disease of kidneys; fibrous adhesions between: 1. Gallbladder and duodenum, and 2, duodenum and pyloric end of stomach, with high fixation of duodenum and pylorus; small brain with some cerebral arteriosclerosis.

Necropsy: On the outer anterior aspect of the right kidney, behind the peritoneum, was a large, red fluctuating mass filled with blood. It lay outside the kidney capsule which stripped readily from the cortical surface. The mass seemed to spring from the adrenal and measured 15 cm. up and down, 7 front to back and side to side. The mass, with the kidney, was fixed in 10% formalin, when section showed it to be made up of a large blood clot continuous with the medullary portion of the right suprarenal. The left suprarenal was essentially unchanged.

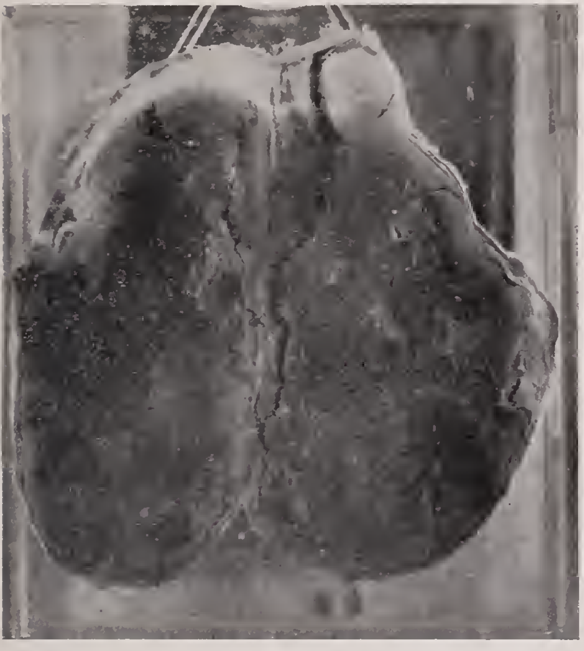

Fig. 1. Specimen laid open after fixation. Suprarenal Cortex forms a narrow rim along upper margin.

Microscopically, paraffin sections of the right adrenal and adjoining blood clot, stained with hematoxyln and eosin, show the blood clot to be composed of an interlacing network of fibrin, enclosing red blood cells. The blood vessels of the reticular zone of the suprarenal cortex are distended with red cells, and there is an irregular, and in places, extreme compression of the cortex, by the hemorrhage. Along the cortico-medullary junction in some regions there are a few leucocytes, while in some cortical areas there is necrosis of the cell cords. The capsule enclosing the suprarenal is edematous. There is no evidence of thrombosis and the few leucocytes present suggest only the reaction following the hemorrhage. The blood clot was apparently rapidly formed and was firm, suggesting that it had been there some time before death. Gram-Weigert stains of the suprarenal revealed no bacteria.

SUMMARY

Suprarenal hemorrhage in the new-born is not uncommon, and at least one patient with a large hemorrhage recovered after an operation. In infancy there are recorded cases with a sudden onset, purpura, suprarenal hemorrhage, and fatal outcome, of unknown etiology. In adults large hemorrhages into the suprarenal are rare, and one such case, probably due to passive congestion, is recorded with clinical and autopsy findings.

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CHRONIC SUBDURAL HEMORRHAGE, WITH CASE REPORT*

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Traumatic intracranial hemorrhage, either epidural or subdural, is not an uncommon accident. The history and symptoms are usually such as to be easily recognized.

A history of a fall or blow on the head, slight or severe which may or may not be accompanied by unconsciousness, is obtained. At first there may be no special symptoms except signs of concussion. The patient may and often does get up and walk. Gradually, however, and sometimes several hours later symptoms of intracranial pressure will appear, such as headache, vertigo, vomiting, slow pulse, and choked disc. As the extravasation of blood increases epileptiform convulsions and paralysis will make their appearance on the side opposite to the site of hemorrhage.

Following head injuries it is always advisable to demand hospitalization for at least twenty four hours. If signs of intracranial pressure or cortical irritation have not developed it is unlikely that hemorrhage of any consequence exists.

The following case is presented because the signs of hemorrhage with intracranial pressure did not manifest themselves until six weeks from the date of injury.

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Putnam-Cushing, in Archives of Surgery, Vol. XI, 1925, have a comprehensive review of the literature with a report of six personal cases and six cases contributed by members of The Society of Neurological Surgeons.

From their review:

Thibert, in 1822, encountered a probable case in which the onset of symptoms was delayed nine years after trauma.

Henschen, K.: Diagnostik und operation der traumatischen, Subdural-blutung, Arch. F. Klin. Chir. 99:67-107, 1912, was able to compile 246 cases of subdural hemorrhage, some with immediate, some with delayed symptoms.

Location: In 1-3 to 1-2 of all cases the process is bilateral and most common in the parietal region. Multiple cysts or hematomas on the same side have not been reported.

Symptomatology: Bowen, W. H.: Traumatic Subdural Hemorrhage, Guy's Hospital Report 59:21-154, 1905.

Bowen makes a distinction between the "lucid interval" occurring before the onset of unconsciousness alone and the "latent interval" before the onset of symptoms of intracranial pressure or cortical irritation. The latter is likely to be longer than the former, and is characteristic of subdural hemorrhage.

In this case the latent interval was six weeks.

Duration of symptoms: In general the longer the latent interval, the more gradual is the onset of symptoms.

A week to several months is the usual time elapsing before the symptoms demand operation or terminate fatally.

Treatment: Generous exposure combined with subtemporal decompression to accommodate the subsequent edema.

PROTOCOL

A. B., Negro, male, age 37, was seen in consultation with Dr. H. T. Allingham on March 12, 1927. At that time he had a flaccid paralysis of the right arm and leg. This condition had existed twenty-four hours.

Six weeks previous while employed in a packing house he walked into a sticking pen to talk to a fellow employee. Here he slipped on the blood covered floor, striking his forehead. He was unconscious for a few minutes following which the laceration above the left supraorbital ridge was sutured. He returned to work in four days. Three weeks later he reported to Dr. Allingham that while working he slipped spraining his ankle. X-ray examination disclosed a fracture of the left fibula. A plaster of paris cast was applied to the left leg. He states that since his head injury he has had a constant headache but had not reported this fact. There was no history of vomiting at any time during the illness.

Examination: March 12, 1927. The lacerated wound of the forehead had healed leaving an almost undiscoverable scar. He complained of a severe left frontal headache which was increased by percussion over that area. There was a flaccid paralysis of the right arm and leg. Temperature was subnormal, pulse 56, respiration 16. The blood and spinal fluid Wassermann reactions were negative. Spinal fluid clear, pressure 9 mm. of mercury, colorless, globulin plus, cell count 15. Lange colloidal test 0000000000.

Neurological examination: March 12, 1927, St. Joseph's Hospital. General appearance: The patient a medium sized, well developed, colored male, about 35 years of age, was lying in bed unable to move the right arm or right leg. He was able to move the left arm and leg freely and evinced no pain upon doing so. The left ankle and foot were encased in a light plaster cast. There was no disturbance in speech or in the movements of the muscles of either side of the face. He appeared mentally clear.

Olfactory nerve: Smell not tested.

Optic nerve: There was no disturbance of the visual fields upon the hand tests. Opthalmoscopic examination revealed no atrophy or choking of either disc.

Oculomotor nerve: The pupils were both irregular but equal in size and both react well to light and accommodation. The extra-ocular muscles supplied by the third cranial nerve were normal in each eye. The eye muscles supplied by the trochlear and abducent nerves react normally.

Trigeminal nerve: The masseter and temporal muscles contract firmly and equally on both sides.

Facial nerve: The muscles of both sides of the face contract equally well. The angles of the mouth were even and he could close both eyes firmly. He was able to wrinkle both sides of the forehead and when he opened his mouth wide the muscles drew neither to one side or the other.

Acoustic nerve: The hearing was normal to voice. Equilibration was not tested.

Glossopharyngeal-vagus nerves: There was no disturbance in speech or in swallowing. The pharyngeal angles appeared equal.

Hypoglossal nerve. The tongue protruded with good force evenly in the midline.

Arms and legs: There was a complete flaccid paralysis of the right arm and right leg, but he was able to move the left arm and leg in a normal manner.

Deep reflexes: The deep reflexes of the right biceps, triceps, and wrist were hyperactive. The left biceps, triceps, and wrist jerks were quite active but not as active as those of the right side. Both knee jerks were over active but the left seemed more active than the right. The right ankle jerk was active, the left not tested because of the cast. There was no Babinski of the right foot or ankle or patellar clonus.

Superficial sensibility: The sensations of light touch, heat, and cold were felt normally over both sides of the body. The sensation of pain (pin prick) was felt stronger over the right arm and leg than over other parts of the body.

Stereognostic sense was normal in the left hand and was present and normal in the right hand as far as could be obtained.

There was no tenderness on pressure of the cervical, thoracic or lumbar spine. There was no pain upon bimanual movements of the right arm or leg. The patient's sensorium was clear. He answered questions asked of him readily and promptly and showed no disturbance in intellectual functions.

March 13, 1927. On this date in addition to the above findings, it was found that there was a Babinski on the Oppenheim test of the right foot but no ankle clonus was present. There was a slight drooping of the right side of the face especially at the right angle of the mouth and upon opening the mouth widely it drew a little to the left side. Percussion of the skull gave a definite tenderness over the left frontal region.

March 14, 1927. The neurological findings of this date were about the same, however, the patient was showing signs of becoming mentally dull. He talked slowly and it took him a long time to answer questions asked of him. Lumbar puncture gave a manometer reading of 9 mm. of mercury, a normal reading, and the Quechenstedt test indicated no obstruction of the spinal canal. Blood pressure readings were systolic 118, diastolic 66.

March 17, 1927. The patient showed considerable tardiness of mental functions. When questions were asked of him, he would slowly answer some of them and would fail entirely to respnd to others. He would not do simple things asked of him, such as to raise his good hand. The right side of the face was definitely weaker than the left, and the tongue, upon protrusion, deviated a little to the left side. The right arm, especially at the elbow, was beginning to be slightly spastic. The right leg was less flaccid than formerly, but was not spastic. The patient refused to cooperate in this examination, and was, at this time, indifferent to his bowels and urine. The abdominal and cremasteric reflexes were present, equal, and not overactive. At times, he would call out loudly with pain which he stated was over the left side of the head. Blood pressure, systolic 108, diastolic 68.

March 18, 1927. The condition of the patient was about the same, except that he was duller mentally; and that there was some increased spasticity of the right arm and an incipient spasticity of the right leg.

DIFFERENTIAL DIAGNOSIS

The possibilities in mind were: Depressed skull fracture, hemorrhage, thrombosis, abscess.

I. Depressed skull fracture: This was ruled out by examination at the time of injury plus stereoscopic x-ray examination of the skull which disclosed no bony pathology.

II. Hemorrhage: It did not seem probable that an intracranial hemorrhage of any magnitude could exist more than twenty-four hours or at most a few days without becoming manifest. There were no cortical symptoms as twitching, convulsions, etc. However, either a traumatic or non-traumatic, epidural or subdural hemorrhage was considered and could not be ruled out.

III. Thrombosis: This also was a possibility which could not be ruled out.

IV. Abscess: From the progressive nature of the disease, subnormal temperature, slow pulse, lowered resistance of the area due to trauma, a general systemic infection three weeks previously with localization and abscess formation was strongly considered and with this diagnosis operation was performed.

Operation: March 18, 1927, St. Joseph's Hospital, Omaha, Nebraska. A large temporal flap was made exposing the left Rolandic area. The dura mater was seen to be tense, non-pulsating and bluish in color. The dura was incised, several ounces of dark fluid blood came away under pressure. The brain then began to pulsate. The dark fluid blood was contained within a delicate fibrous capsule.

Because, as advised by Putnam and Cushing, cerebral edema is apt to occur in the brain released from its long pressure the osteoplastic exploration was combined with a subtemporal decompression. The wound was closed in layers with a small gutta percha drain which was removed in forty-eight hours.

Subsequent course: On the evening of the day of operation, the patient was able to flex his right arm and right leg and was able to sit up in bed without assistance. The following morning his headache was entirely relieved and he was able to move his right arm and leg quite freely. The Babinski sign of the right foot was gone but the reflexes of the right arm and leg were more active than the left. A rapid and complete recovery was made.

The patient is now employed as a laborer and has no complaints eighteen months after operation.

FOURTH VENTRICLE TUMOR*

Report of a Case With Clinical Recovery Following Decompression and X-ray Radiation.

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My reason for presenting this case is that it represents an unusual and rare type of brain tumor and also because following decompression the patient made a good functional recovery.

Mr. L. A. P., age 31 years, was referred, September 29, 1927, by Dr. R. Mauer. The patient's past history was quite unimportant. Normal health was present until January 1, 1927, when the patient suddenly developed very severe "piercing" suboccipital pain. The patient was confined to bed one week on account of the pain, which was relieved somewhat by lying down, and was accompanied by nausea but never vomiting. The pain disappeared only to recur again within two weeks. At times the pain was accompanied by a sensation of the head being drawn backwards and a stiffening and cramping of the fingers of both hands. These attacks of pain continued, coming more often at night time, as high as nine attacks occurring within 24 hours, and some attacks lasting as long as 30 minutes. The patient was forced to discontinue work as an electrician, September 1, 1927, on account of the attacks of severe cervical pain, which a sudden movement of the head or tilting the head backwards would bring on. At times this pain radiated over the temporal regions. The patient had become very apprehensive over his condition.

When I was first called to examine the patient I found him in an attack of pain holding his hands to the occiput, arm muscles very tense, the veins over the face were distended and the patient groaned as though in severe pain. The patient stated his arms felt numb and the head felt as though it wanted to draw backwards. Examination at this time was entirely negative except for bilateral choking of the optic disks of 2-3 diopters with a few hemorrhages in the left retina. The eye grounds had been reported as negative 10 days previously.

The patient was hospitalized for further observation. Repeated examinations were negative for organic disease except for the choked disks. Cervical and head x-ray studies were negative. Concentrated magnesium sulphate always gave temporary relief from pain. Intravenous iodides were given for a time without benefit. After considerable hesitancy a spinal puncture was done taking all precaution possible to prevent sudden release of increased pressure. The spinal fluid examination was entirely negative except for increased pressure, and a delayed response of increased spinal pressure to jugular compression.

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*Case presentation before the Douglas County Medical Society, November 13, 1928.

A tentative diagnosis of brain tumor in the posterior fossa not localizable was made. It was believed that there was undoubtedly a partial herniation of the cerebellum into foramen magnum that was producing the upper neck and back pain.

Dr. J. J. Keegan performed a suboccipital decompression; the dura was under considerable tension and moderate herniation into the foramen magnum was present. A careful search of the angles and cerebellar lobes revealed no evidence of tumor. Upon cutting through the vermis and exposing the fourth ventricle a purplish vascular type of tumor was seen lying in the ventricle. Dr. Keegan felt that it would be futile to attempt at this time to remove the tumor. Closure was made and the patient made an uneventful post operative convalescence.

Progress: The patient was immediately relieved of his pains and has had no pain up to date. At first the patient was troubled considerable by vertigo upon turning the head quickly, this symptom was accompanied at times by vomiting but gradually disappeared. By February, 1928, the choked disks had entirely disappeared and the hemorrhages were no longer visible.

X-ray therapy was begun shortly following the operation and has been continued up to date by Dr. C. B. Pierce.

At the present time the patient is practically symptom free, although at times slight vertigo is present upon sudden movement of the head or while lying on his back with the head tilted backwards. He is able to work about half time and is gradually increasing the length of time at work. There had never been any sign of herniation at the site of operation.

COMMENT

This patient presented to a number of physicians a problem in diagnosis to account for the cause of the pain. It was not possible to determine the cause as a pressure pain until the choked disks became manifest. After the pressure syndrome was established the probable cause was doubtful, but tumor seemed to be the most likely cause. The localization was impossible but clinical signs pointed to a posterior fossa lesion. This case illustrates the value of simple decompression which apparently has accomplished as much as could be hoped for. Upon examination of the literature it seems that tumors in this location are more or less benign producing symptoms by mechanical or partial blockage of the cerebrospinal flow, thus decompression very frequently gives very good results.

Tumors in the fourth ventricle are rare. Bailey(1) in a review of the Cushing cases reported six ependymal fourth ventricle tumors out of a group of about 900 verified brain tumors. He states that these tumors are usually benign, slow growing and cause death by acute block of the ventricular system with respiratory death. If uncovered at operation they should be left alone. The symptoms are not diagnostic; an increased pressure syndrome is present with at times signs of a mid cerebellar lesion and upper neck and back pain from irritation of the accessory root of the spinal accessory nerve. At times vagus stimulation is present. The results in their six cases were: One alive 11 years, post operative symptom free; one in good condition 6 months post operative; one death unoperated proved at necropsy; one in good condition one year post operative; one post operative death; one death 6 months post operative from sudden block.

Hun stated that tumors in the fourth ventricle cause intense dizziness only when the head is moved. Except for this symptom the diagnosis is extremely difficult.

Shuman(2) recently reported two cases of sudden death in fourth ventricle tumors. In one case the severe pain was confused with migraine, the patient died suddenly following administration of morphine. The second patient had the paroxysmal upper cervical pain associated with dizziness and drawing of the head backwards. This patient also died suddenly after administration of morphine. The tumors were found at post mortem, one a cyst and the other an ependymal blastoma. Shuman's experience made him urge extreme caution in the relief of pain that may be the result of increased intracranial pressure. Morphine is contraindicated in this type of pain. Magnesium sulphate usually gives definite relief from this type of pain.

DISCUSSION

DR. J. J. KEEGAN: I don't know that I have anything to add except that the case represents the advisability of not trying to do too much in an operation even when you find a tumor. Decompression itself gives a good prospect of relief; tumors in that region are rather slow growing and the prospect of recovery or relief by x-ray treatment is good. The patient shows no herniation at the site of operation, there is no evidence of enlargement of the tumor. It has been a year and the outlook I think, is very good.

DR. C. B. PIERCE: I agree with the preceding speaker—radiation is of value. Bailey and Sosman, who follow most of Cushing's cases, have recently reported a critique of their results. They are rather pessimistic about brain tumors in general; but one occasionally gets startling results. Their dosage is far more intensive than ours, although the physical factors are about the same. They begin immediately post operative with 60 to 80 per cent skin dose. If they get no reaction, they proceed to administer a hundred per cent skin dose every week for a period of six months.

The essential thing in this case to bring out from a radiation standpoint is the advisability of operative intervention, to at least localize the tumor, and, if possible, discover the type of tumor before the radiation therapy begins.

The meningiomas and similar tumors are more or less amenable to surgery, the gliomas are not amenable to radiation in any large degree, so that information in regard to those two groups is valuable if we are to offer some information as to the possibility of relative improvement, or temporary cessation of the neoplastic extension after operation.

This man demonstrated marked improvement at the time I saw him in December, last. Whether the improvement was due to Dr. Keegan's investigation or to our treatment, I couldn't say, but I think we should at least give the patient the benefit of the doubt, by administering Roentgen therapy, post operative.

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INTUSSUSCEPTION*

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Intussusception is the protrusion or the invagination of one part of the intestine into another. This usually takes place in a forward or downward direction, but occasionally does occur in an upward or backward direction. The cause is said to be for the most part an irregular peristalsis, which in turn may be caused by mesenteric bands, contractions due to peritoneal adhesions, and possibly to irregular stimuli, due to embryonic misplaced nerve fibers. Perrin and Lindsay contend that, the determining factor is the production of the equivalent of a foreign body within the intestines. The foreign body is provided by the swelling of pre-existing lymphoid tissue. The factor that provokes this swelling is some gastrointestinal disturbance. In primary colic intussusception an important factor being the narrowness of the colic lumen in early life(1). A pedunculated polypoid tumor arising from the mucous membrane of the intestinal wall may be forced along the interstinal canal dragging the wall with it.

According to their locations invaginations are classified as enteric, ileo-caecal, ileo-colic, colic, or colico-rectal, and other rare types. The ileocecal form in which the ileocecal valve prolapses into the cecum, and drags with it the ileum and its mesentery is by far the most common, especially in children.

The exciting cause is usually not apparent, but in some instances is due dietetic errors, active purgation, or violent jolting. It is by far the most common form of intestinal obstruction in children, about 56% of all cases occurring from the fourth month to the tenth year(2). Among these the male is by far the most commonly affected, the ratio being about three to one(3). While the most frequent form of intestinal obstruction in children, it is by far the most unusual in adults.

As a result of the compression of the mesenteric vessels of the invaginated portion, which soon occurs, there is an oedema of the intestinal walls, inflammation, and agglutination of the layers; as the compression increases a hemorrhagic infarction occurs, which if not relieved terminates in gangrene.

The symptoms of intussusception characterized by the dramatic suddenness of the attack—affecting the sturdy youngster as frequently as the puny—pains in the epigastric or umbilical region which cause the youngster to cry out, great restlessness, drawing up of the legs, vomiting frequently repeated, and complete arrest of passage of feces, after the primary emptying of the colon; tenesmus and the passage of blood and mucous in the great majority of instances. In the intervals between pain the patient lies very quiet, and sometimes assumes a knee chest position in the bed. The right iliac fossa feels empty. In favorable subjects a tumor may be discovered in the abdomen, and after twelve to eighteen hours a mass may be felt on rectal examination in about fifty per cent of cases(4). Peristaltic waves may be visible. The nearer the lesion is to the stomach the more quickly constitutional symptoms appear. Prostration always sets in soon after the onset and collapse ensues within a few days unless relief is at hand. The pulse may be unchanged at first but within a few hours mounts, temperature normal or subnormal, until peritonitis supervenes.

Once the diagnosis is established there is no alternative to operation, since the method of inflation, haphazard and dangerous, has been abandoned. An hour's time spent in preoperative preparation, for the prevention of operative shock is not to be regretted. These patients are always suffering from a privation of fluid. The subcutaneous administration of normal salt solution and the intravenous administration of dextrose may be of benefit. The application of external heat, with diathermia over the lower chest and upper abdomen may be well worth while.

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*Read before the Ninth Councilor District Medical Society, Kearney, October 9, 1928.

The administration of digitalis in adequate dosage is always indicated at this time(5).

Through an adequate incision manual disinvagination should be tried. Having exposed the full length of the intussusception, the fingers of the one hand gently press the intussusceptum backwards, advancing with each little progress that may be recognized. The opposite hand steadies the intussuscipiens along which the intussusceptum is passing, if the intussusception be of any considerable length. If it be very limited the surgeon's hand which has been steadying the intussuscipiens against the fingers which have been pushing the prolapsed portion backward, now takes place upon the freed portion of the intussusception and exerts very gentle tension, just enough to assist the bowel in the right direction, outward.

If reasonable efforts fail, similar attempts should be discontinued and one of the following means taken:

(1) Partial enterectomy of the entire site of invagination, followed by end to end or side to side enteroenterostomy.

(2) Partial enterectomy of the base of the invagination, followed by end to end enterostomy, leaving the detached intussusception to be passed by rectum.

(3) Partial enterectomy of the site of invagination followed by the formation of a temporary anus.

(4) Jewett Barked Method. Intussuscepiens and intussusceptum are sutured together, and an incision is made through the wall of the intussuscepiens, over the base of the intussusceptum and through this incision, the intussusceptum is excised, the free ends of the intestines sutured together and the window in the intussuscepiens closed(6).

CASE REPORT

A male child, two years of age, was put to bed about eight-thirty p. m., feeling fine. The parents were not awakened during the night by any restlessness or crying of the child but shortly after awakening he was taken with a sudden pain in the abdomen. He vomited and had frequent loose stools and when his symptoms failed to lessen, the family doctor, Dr. Chas. Lucas, of Shelton, Neb., was summoned. He found the child crying out with pain in his abdomen, the temperature axillary, ninety-seven and eight-tenths, and while a physical examination was being attempted, a stool of bright red blood and mucous was passed. At this time a casual diagnosis of bloody flux was made and a tentative treatment outlined, alkalinization, colonic irrigation, forced fluids and nothing by mouth. He was not called again until the evening of the following day and at that time had no difficulty in outlining a saucer shaped mass in the left hypochondrium. The enemas were returning clear and fecal vomiting had occurred. At this time he immediately surmised intussusception and the child was brought to the hospital about nine fifteen p. m.

Examination revealed a two year old child in bed turned face down in the knee-chest position moaning with pain and who tried to reassume this position when an examination of the abdomen was attempted. The features were drawn, skin dry, eyes listless and dull, tongue slightly coated and heart sounds a little weak, pulse 140 and temperature ninety-nine and four-tenths. The abdomen was scaphoid, save for a visible enlargement in the left side on a level with and extending about three inches below the umbilicus, there was quite a marked muscular rigidity, palpable saucer shaped tumefaction in the same region, where a gurgling sound could be heard. The patient was not sensitive to manual examination. This point I consider important in differentiating between an acute inflammatory and a mechanical condition.

Without further diagnostic procedure we concurred in a diagnosis of intussusception. The possibility of a volvulus or visceral herniation was kept in mind, 500 cc of normal saline was given subcutaneously.

Under ether anaesthesia a mid-line incision revealed a tumor mass, apparently the descending colon crowding itself into the wound. This proved to be an intussusception extending from the ileo-cecal junction through the colon to a point just below the descending loop of the sigmoid. The child took the anaesthetic badly, and the slightest manipulation of the bowel seemed to produce an apnoea. However, a dis-invagination up to the last six inches was accomplished in the usual way. At this point further progress was impossible, and it looked as though a Jewet-Barker procedure was indicated. However, time was an important factor, and it occurred to me that an incision through the serosa and muscular layers of the intussuscepiens might make enough difference to clear the intussusceptum. I made such an incision through these layers in a line that would be used for the former procedure and was able to gain almost the entire distances, the incision was carried down to lower edge of the intussuscepiens and the disinvagination completed.

The last four inches of the involved bowel looked bad, an ashy grayish background studded with hemorrhagic infarcts and oedematous. The mesenteric vessels were functioning, so the bowel was closed with a double aught (00) catgut suture ,and the peritoneal edges buried by continuous suture. The mesentery of the ileocecal fold was sutured together with interrupted sutures, care being taken to avoid its vessels. The opposing lateral walls of the ileum and colon were sutured together and the abdominal wall closed. The recovery was uneventful.

CONCLUSIONS

(1) That owing to the peculiar pathologic changes involved in intussusception, a section of gut that may appear beyond repair will do so if the mesenteric vessels are functioning.

(2) In this particular instance, the longitudinal incision through the serous and muscular coats of the bowel, saved from twenty to twenty-five minutes time and its attending shock—in this instance, a life saving measure.

I have mentioned this procedure not because I claim priority, though I know of no previous publication, but because it relieved me from a trying situation, in a satisfactory manner.

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(5) Cecil—Text Book of Medicine, Arthur L. Holland, Page 725, 1928.

(6) Bickham—Operative Surgery, Vol. IV, 1924. W. B. Saunders Company.

THE USE OF LACTIC ACID AS A VAGINAL DOUCHE*

CHAS. F. MOON, M. D.,
Omaha, Nebr.

The treatment given in this paper is one based on a knowledge of the physiology and the bacterial flora of the normal vagina.

First, undoubtedly there is, under normal condition, a balance or symbiotic relationship between the bacterial inhabitants of the vagina. The condition we know as disease is the invasion into these parts by some stronger organism or changed condition of the parts whereby a dormant organism becomes active and under these peculiar conditions flourishes. In 1892, Doederlein(1) published the results of his studies of the bacterial flora of the normal vagina. He found that the predominating organism was a long, thick, nonmotile, gram-positive bacillus and he named it the Doederlein vaginal bacillus. These organisms produce lactic acid which has bacteriocidal properties. Second, undoubtedly these organisms belong to a group rather than all being of one particular kind and we shall more properly speak of the Doederlein group of vaginal bacillus than to speak or think of them as one definite organism. Doederlein also noted that the bacilli were associated with yeast spores in 39% of his cases.

The recent work of Apel(2) and even more recent work of Tateyama(3) tend to corroborate Doederlein's original observations. Tateyama found that the vaginal bacilli were present, in large numbers or pure cultures, in 90% of healthy women during the first and second months of pregnancy. With the advance of gestation, the vaginal bacilli become less numerous. Upon this basis Apel divided the cleanliness of the vagina of the pregnant woman into three stages. Tateyama found that in the non-pregnant women with a genital infection, the vagina was not of the first degree of cleanliness.

He concluded that when the first degree of cleanliness was found pregnancy should be suspected.

The fact that Doederlein's vaginal bacilli are the predominating organisms in the vaginal flora is also borne out by the researches of Solomon(4). Solomon found the vaginal bacilli could be found in the vagina of a new born 19 hours after birth. The bacilli constituted 10% of the total flora in 24 hours and 64% in ten days.

In view of the above observations, it seems natural to assume that if the growth of the bacilli can be stimulated; by their increased numbers, they will flourish at the expense of other organisms. The growth of the bacilli can best be stimulated by lactic acid vaginal douches, since by their own secretions that is the normal medium for their growth. Yeast markedly increases the efficiency of the douches, since the yeast apparently favors the growth of the vaginal bacilli.

Landau(5) first inaugurated the use of yeast in chronic gonorrhea in women. That author introduced yeast and relatively large quantities of fresh cultures of non-pathogenic bacteria. Landau reported very good results and concluded that, first, quickly growing yeast deprives other bacteria of the water and food necessary for growth. Second, a peptogenic ferment is formed which deadens the activities of the pathogenic bacteria. Third, the yeast would change the reaction of the vagina and would neutralize the toxins of pathogenic bacteria.

Schiller(6) repeated much of the work of Landau and although he did not necessarily agree with conclusions which Landau arrived at, he did conclude that the use of yeast was beneficial. He found that yeast grows best on "Bierwurke" and uses fresh brewery yeast. He cleans the vagina with sterile water and then introduces two teaspoons of yeast and one teaspoon of grape sugar through a speculum. This may be followed by a tampoon if the procedure has to be carried out in the office. After eight to twelve hours the vagina is cleansed with a vaginal douche. The above process is repeated every 48 hours.

In our pre-natal clinic, suppositories made of Fleischmann's yeast are used rather than brewery yeast. The lactic acid douche is followed by the insertion of the yeast suppository.

Since Doederlein bacillus excreates lactic acid and flourishes in a lactic acid media it was thought when this idea first came to us that by the increase of lactic acid we might make conditions favorable for the overgrowth of Doederlein bacillus and thus crowd out the unwanted organisms which were present. I often explain to the students as a comparison that any wheat seed thrown on well tilled freshly raked soil will germinate and grow, whereas the same grain thrown on a well sodded lawn cannot gain a foothold. I want you to understand that this is only used as an illustration and I do not believe that Doederlein bacillus forms a protective coating or armour over the vaginal muccus membrane. Various strengths of lactic acid were used and it was found that ½ of 1% was the most desirable strength for use of lactic acid as a douche since it gave us the desired results and yet caused no irritation or burning when it was used. Roughly this amounts to about ½ teaspoon full of ordinary commercial lactic acid as purchased at the drug store to two quarts of warm water. I think that the manner of taking the douche all-important. I believe the patient should lie down, preferably in the bath tub and the douche bag should be only a foot or 18 inches above the hips and I recommend that she use a large douche point and insert it as far as possible without causing pain. One to two douches a day clean these cases, with a large amount of discharge and especially those whose discharge causes irritation around the vulva and over the thighs, in a very few days and where a case of this severity is found they should have at least two douches a day and after the evening douche should insert a suppository of a half cake of Fleischman's yeast. The yeast apparently does two things, it aids in increasing the acidity of the vagina and also by its growth tends to rid the vagina of other organisms except the Doederlein group. It has been found by practically every person working on a determination of vaginal flora that a large percentage of cases have yeast present and seemingly the Doederlein group and yeast exist well together. This particular douche will not, nor will any douche clear up what is ordinarily spoken of as a chronic cervicitis or cervical endometritis and in these cases a cautery should be used and lactic acid douche depended upon to prepare the cases for cauterization.

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*Read at the Elkhorn Valley Medical Society meeting, Norfolk, Nebr., July 18, 1928.

The last four years this douche has been used in my private practice and in the dispensary at the University of Nebraska Medical College and has proven so successful that I have discarded all other douches and used this exclusively.

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—1611 Medical Arts.

COUNCILORS ANNUAL MEETING

JANUARY 14, 1929.

The annual meeting of the Councilors was held at the Omaha Athletic Club, January 14, 1929 at 6:30 P. M. The meeting was called to order by Dr. Bryson. The following members of the Council were present: Drs. Lehnhoff, Overgaard, Plehn, Fordyce, Cook, Tornholm, Potter, Nielsen, Bryson, Rork, Douglas and President-elect Owens. In addition to these the following guests were also present: Drs. Hohlen, Hays, Dunn, Fouts, Adams, and the Journal Committee consisting of Drs. Bailey, Bridges and Long. Mr. Gene Huse was also a guest.

Dr. Frank Tornholm was elected President and Dr. Overgaard reelected secretary. The regular order of business was then taken up.

Dr. Adams read the Journal Fund financial report. Motion made that a standing vote of appreciation be given the Journal Committee for their splendid work during the year. Seconded and carried.

Dr. Dunn read the report of the Delegates to the A. M. A.

Motion made that Dr. Dunn's report be accepted and published. Seconded and carried.

Dr. Hohlen read the report of the Campaign Committee.

Motion made that the report be accepted and placed on file. Seconded and carried.

Motion made that a recommendation be made to the House of Delegates to make an additional appropriation of $500.00 for the Campaign Committee. Seconded and carried.

Dr. Hays read the report of the Public Activities Committee.

Motion made that the report of the Committee be accepted and published. Seconded and carried.

Motion made that a recommendation be made to the House of Delegates for an additional appropriation of $1,000 for the Public Activities Committee to be used for office expense. Seconded and carried.

Motion made that as an emergency the secretary be authorized to draw a check payable to Dr. Hays for $360.00 for office expense this year. Seconded and carried.

Dr. Fouts read the report of the Medical Defense Committee.

Motion made that the report of the Medical Defense Committee be accepted and placed on file and that the chairman he complimented for his work during the year. Seconded and carried.

Dr. Bailey gave his report on the Legislative Committee.

Dr. Nielsen read the report of the Insurance Committee.

Motion made that this report be accepted and placed on file. Seconded and carried.

Dr. Adams read the secretary's report, and also the treasurer's report.

Motion made that the secretary-treasurer's report be accepted and published. Seconded and carried.

A committee of three consisting of Drs. Nielsen, Rork, and Bryson appointed by the chair to audit the books.

Dr. Hayes suggested that the Program Committee get a man to speak on the subject of State Medicine.

The report of the Sub Committee was read.

Motion made that this report be accepted and published. Seconded and carried.

The program Committee report was read.

Motion made that this report be accepted and published. Seconded and carried.

The report of the Committee on Medical Education and Hospitals was read.

Motion made that this report be accepted and published. Seconded and carried.

Report of the Auditing Committee was called for.

Report of the Auditing Committee:

The Auditing Committee certify to the financial statements of the General, Defense, and Journal Funds as being correct as submitted.

—Drs. Nielsen, Rork and Bryson, Auditing Committee.

Motion made that the Auditing Committee report be adopted and that the several reports be published in the Journal. Seconded and carried.

Motion made that since an emergency exists, the secretary be authorized to draw a check of $50.00 for lawyer's fee. Seconded and carried.

Motion made that an emergency appropriation of $100.00 be allowed the Legislative Committee. Seconded and carried.

Motion made that the secretary be instructed to invest $1,500 for the General Fund and $1,000 for the Defense Fund in reliable companies. Seconded and carried.

Motion made to adjourn. Seconded and carried.

REPORT OF THE NEBRASKA DELEGATES TO THE MEETING OF THE AMERICAN MEDICAL ASSOCIATION AT MINNEAPOLIS, JUNE 11-15, 1928.

Many problems, more or less vital to the medical profession, were subjects of consideration by the House of Delegates at the Minneapolis Session, June 11-15, 1928. We shall try to emphasize only some of the obviously more important things considered, and to call your attention to two problems for the immediate future.

First, the multiplicity of medical meetings and their bearing on the function of the parent organization; second, the ever increasing pressure to take the practice of medicine out of the hands of the individual physician and put it under corporate or governmental control.

Both President Thayer in his address to the House of Delegates and Secretary West in his report to the House of Delegates mentioned the multiplicity of medical societies and remarked that the American Medical Association was the one important organization for the practitioner to adhere to through his county and state society. President Thayer said, "He who attends them (the meetings of the A. M. A.), and distributes his time as he should, familiarizes himself with the scientific exhibit and follows the record of the proceedings in The Journal, will find himself well abreast of the progress of the day. Especially familiar with the programs of these meetings for more than twenty-five years I, for one, am proud of them. More than this, the opportunity to meet one's fellows from all over the country is invaluable." Secretary West spoke of the serious possibility of "over-organization due to the existence of a veritable multitude of societies, clubs, institutes, colleges, convocations, congresses, conferences, assemblies and associations. Of course, many of these are doing good work, some are helpfully supplemental to regularly organized medical societies, and it is probably true that a few of them are doing what our own societies cannot readily do. It is possible, however, if not definitely a proved fact, that some are merely intruding, duplicating and interfering, whether designedly or otherwise."

It is obvious that something will have to be done to lessen the demands made by multifarious meetings on one's time and energy. Some of us are supposed to attend three or four hospital meetings a month, two meetings of the county medical society to say nothing of meetings civic and otherwise that demand attention.

Every meeting of the A. M. A. since we have been members of the House of Delegates has revealed the insinuating effort of various bodies to control, restrict or hamper certain phases of medical practice. We are hedged about with more or less troublesome alcoholic and narcotic restrictions. The Sheppard-Towner Maternity Act was extended by Congress for two years, by an act approved Jan. 22, 1927, with the express provision that it shall be void thereafter. Legislation similar in principle has already been introduced into the Seventieth Congress.

For the fiscal year ending June 30, 1927, 71,967 admissions had been made to the hospitals under the control of the Veterans' Bureau. During that year 49% were based on injuries and disease not of service origin—this irrespective of the social or financial status of the individual. The Board of Trustees has adopted the following resolutions and has had copies thereof sent to the Veterans' Bureau, to members of the Committee on World's War Veteran Legislation of the House of Representatives and of the Committee on Finance of the Senate:

WHEREAS, the Veterans' Bureau provides hospitalization, medical and surgical care, and nursing for many persons suffering from diseases and injuries of civil life and without any relation whatsoever to military service; and provides for the transportation of the patients between their homes and the places of treatment, without cost to the patients so treated and at the sole expense of the taxpayers of the country; and

WHEREAS, Private hospitals, and physicians, surgeons, and nurses, that depend for their support and activities on fees paid by patients for services cannot compete with the Veterans' Bureau on the basis stated above; and

WHEREAS, The service rendered by the Veterans' Bureau at public expense is not a pension to which a veteran is entitled because of disability incurred in line of duty, inasmuch as it has no relation whatsoever to the existence or extent of any such disability, and is not a philanthropic provision by the federal government to meet the needs of the destitute, inasmuch as it is available to both rich and poor, but is simply a gratuity provided by the government at the expense of the taxpayer; and

WHEREAS, Legislation is pending in Congress to enlarge and to perpetuate the system of gratuities thus established ;therefore be it

RESOLVED, That it is the sense of the Board of Trustees of the American Medical Association that no legislation that proves for the enlargement or perpetuation of the treatment of patients by the Veterans' Bureau for diseases and injuries having no relation to military service, without cost to the patient but at the expense of the taxpayer, should be enacted; and be it further

RESOLVED, That it is the sense of the Board of Trustees that legislation should be enacted to discontinue as speedily as possible the present system providing for the treatment of such patients at public expense.

Two bills have been introduced to provide hospitalization at the expense of the federal government for civilian employees. The bills do not state whether this is to provide only for such individuals as have incurred their disability through line of duty. There seems to be a constant urge on the part of "philanthropic" individuals to offer gratuitous medical service to this or that group of individuals, which medical service is to be provided in part at the expense of the medical profession. In the Veterans' Bureau "gratuities thus distributed" have no relationship to the nature of the illness or the nature of the service, but are based simply on the ill health or injury of the applicant and his ability to abandon his home and means of livelihood and enter a hospital maintained by the Veterans' Bureau.

The activities of the Bureau of Legal Medicine have been far reaching in their importance. Through their work relief was obtained from the unjust discrimination against the medical profession by the Internal Revenue Department in allowing other professions and not the medical profession to deduct traveling expenses to scientific meetings. The Bureau with the American Bar Association are attempting to work out some solution of the problem of expert testimony. The Bureau prepared a draft of a proposed law which has been submitted to the committee of the American Bar Association. Copies of this draft have been furnished to the several State Associations. A law has been drafted to regulate the manufacture and sale of cosmetics.

Through a legislative reporting service the Bureau of Legal Medicine and Legislation received in 1927 about 2,000 bills of interest to the medical profession.

The subject of institutions practicing medicine was voiced in a supplementary report on Medical Education and Hospitals. It was argued that the practice of medicine was an individual and not a corporate thing. The full time clinical teacher, an experiment which is not working out, was an entering wedge to institutional medical practice. It was urged that the medical profession do as the legal profession has done; place itself on record as against institutional practice of medicine.

The question of eugenic sterilization and the legalization of the imparting of contraceptive information to patients in the regular course of medical practice is sure to come up in the not too distant future.

Mention must be made of the work of the Council on Education and Hospitals and the so-called Hospital Register. There are now 6807 hospitals included in the Hospital Register; 462 have been refused admission. Hospitals are divided into satisfactory hospitals, hospitals considered suitable for the teaching of internes, and hospitals approved for residence in the specialties. It is the opinion that this standardization of hospitals should be in the hands of the American Medical Association, which is best suited to gain the information requisite to hospital classification. Progress has been made in the classification of Clinical and Roentgenological laboratories.

A letter was received from the Secretary of the National Grange on to the dearth or rural physicians, indicating that if the A. M. A. did not take care of it somebody else would . He stated that they were not advocating one class of doctors for town and another for country; he said that what was required was more practical instruction in less time and with the expenditure of less money than under the prevailing conditions.

The following resolution submitted by the Reference Committee on Public Health and Hygiene was passed by the House of Delegates:

RESOLVED, that an official reply to The Grange be formulated by the Secretary of the House of Delegates embodying the following thoughts:

1. That the House of Delegates is keenly alive to the problems involved and recognizes that, although there will always be some inadequacy of medical service in sparsely settled communities, improvement of medical service in rural districts is needed.

2. That the problem is being intensively studied by the Commission on Medical Education (already in its fourth year), the Committee on the Cost of Medical Care, the Council on Medical Education and Hospitals, and other bodies.

3. That the problem is fundamentally economic and the solution involves much more than the mere length and costs of medical education.

4. That patience and time are necessary in order to obtain data and evolve methods for solving this problem.

5. That suggestions from the National Grange and information will be welcomed by the House of Delegates and by any of the bodies specially engaged in the study of medical, educational and economic problems.

It is interesting to note that the Council on Medical Education had this information to offer:

Of the demands of rural communities for physicians which came to the A. M. A. in the last several years and were investigated (93 in number) it was found that in 33% of the cases there was a physician available in that community, in 48% a physician was available within five miles and in 88% within ten miles.

Your delegates would appreciate any advice and instructions in regard to any matters that should be considered by the House of Delegates of the American Medical Association.

(Signed): A. D. Dunn,
R. W. Fouts.

REPORT OF PUBLIC ACTIVITIES COMMITTEE, JANUARY 14, 1929

The work of the Public Activities Committee for 1928 consisted of five major efforts:

1. A Health Education course was arranged and given at the State Normal School and Teachers College at Peru, Nebraska.

From February 7 till April 5 a weekly lecture was given by a member of the State Medical Association, dealing with some phase of health. The specific purpose of the lecture course was to teach the teachers how to make physical examinations of the pupils as now required by law, and also aid her in carrying on a constructive health program within her school.

2. A Health Week Program was given to lay groups in conjunction with the annual meeting of the Nebraska State Medical Association at Hastings, May 13 to 18, 1928. The Mayor of Hastings proclaimed this week as Health Week and urged all citizens to attend these lectures.

The program was designed to offer to all classes an opportunity to hear the talks, and they were well attended and much appreciated. In all eleven lectures were given and we had requests for more.

3. In conjunction with the Nebraska Tuberculosis Association a Health Education course was put on at the University of Nebraska from June 4 to July 15. Twelve lectures were given by members of the Nebraska State Medical Association which covered well the subject of School Health. Physical Examination, Special Examinations, Care of the Teeth, Adenoids and Tonsils, Malnutrition, Nutrition, Mental Hygiene, Conservation of Seeing and Hearing, First Aid, Control of Contagious Diseases, Prevention of Heart and Lung Disease, and The Value of School Health Program were the phases dealt with.

4. The Health Demonstration at the Nebraska State Fair, August 31 to September 7, a running report of which was given in the October issue of the Journal.

The Nebraska State Fair offers the greatest opportunity to educate the masses on preventive and scientific medicine that we have yet discovered. Our teachings are elementary and our program yet crude, for we have been handicapped by many obstructing forces and lack of cooperation. The task is great, involving a tremendous amount of work, diplomacy and patience. Yet the results obtained make the effort well worth while. Already the public is beginning to realize that the Nebraska State Medical Association Exhibit is one of the important educational features of the Fair.

5. An arrangement with the Kearney State Teachers College at Kearney, Nebraska, for a Health Education course to be given by members of the State Association. This course began on October 3, 1928, and carries through until May 22, 1929.

Besides these major efforts forty-six speaking engagements have been filled through this committee, by medical men who addressed Rotary Clubs, Kiwanis Clubs, P. T. A. meetings, Commercial Clubs, and church gatherings on some phase of medicine.

The accomplishments for the year may not appear great, but the scope of this class of educational work is unlimited and the opportunities to strengthen our position with the public are many, yet to do these things it has required of the chairman an absence of thirty-five days from his office, a correspondence of over 400 pages and from the other members of the committee a proportionate amount of time and effort.

E. R. Hays, Chairman,
Public Activities Committee.

SECRETARY'S REPORT

The Nebraska State Medical Association ended the year 1928 with 1204 members in good standing. This is eight less than for the year 1927. During 1928 eighty eight members were dropped from the rolls, due to deaths, removal from the State and other causes. Eighty new members were enrolled.

The year, on the whole, has been a very successful one as indicated by the various reports of the committee chairman. The work of the Public Activities Committee is again to be highly commended. The State Fair Exhibit was much bigger and finer than one year ago. The lecture courses at the State Normal Schools and the summer sessions of the University of Nebraska, were exceedingly popular and of much benefit to the students attending. In the secretary's opinion both of these programs should be encouraged in every way.

While there has been no session of the Legislature during the past year, the committee on Public Policy and Legislation and the Campaign Committee working together, found plenty of work to do. This concerned the investigation carried on by a committee appointed by the Governor to study and make recommendations relative to the Compensation Law. Several changes in the personel of the Basic Science Board occurred and this had to be watched. Finally Dr. Hohlen and Dr. Bailey spent a great deal of time keeping things lined up during the campaign and election, looking towards the present session of the legislature. All of these things will no doubt be explained in detail in the reports of the respective chairman.

There are three matters yet which the medical profession should consider seriously, and with one of them must do so for their own welfare:

1. Reciprocity with other states is not yet satisfactory. The Basic Science Board last spring adopted the policy of accepting examination reports from other states but this is as far as things have been developed. The Secretary of the Department of Public Welfare maintained his old idea and has made no move to secure official reciprocity between the states. It is to be hoped that with a new man in the above office this can be settled.

2. The old board of Medical Examiners still refuses to recognize the Basic Science Board. It requires all students to take a repeat examination on all subjects better covered by the Basic Science Board. This is an injustice to the Basic Science Board and was not intended by the Law. It will also injure both of our medical colleges. In fact, in order to assume such power the old board has to do quite a fantastic piece of interpreting of the Law. Your secretary feels that it is the old case of an executive board being asked to give up some of its authority. If the members of the Nebraska State Medical Association will bring pressure on the board both as individual members and as societies this matter probably can be straightened out, but will not be if left to the old board.

3. The third matter is one of national scope. It has reached a much more severe condition in the East and in the large cities than it has in Nebraska. By this is meant making provision of some sort to give adequate medical care to every individual at a cost that the individual can pay. The cost of medical care has increased quite materially and justly so, in the last few years, along with the cost of all things necessary and desirable. This has produced a situation whereby a large per cent of our population who are not charity cases, cannot afford the cost of adequate medical care. Outright charity cases and those who are well to do are adequately cared for, but the great mass of people in between are not. As an illustration, only four per cent of our people pay income tax. As a result of this condition a great many lay organizations have began to function as practitioners of the healing art with the usual bad and even vicious things that creep in where the laity try to regulate the care of the sick. The Ford Hospital in Detroit, Rosenwald's $20,000,000 gift to build, equip and operate Lay Health Centers, are examples. Other organizations with no apparent serious aim are establishing these centers. No effort is made to find out what the patient should honestly pay and as a result much that is bad is developing. Dr. Olin West, Secretary of the A. M. A., made the statement that "This is the biggest question facing the medical profession today." This question can be solved in one of three ways:

1. It can go on and be developed by lay organizations as is being done.

2. It can be taken over and be handled by the State. In other words "State Medicine".

3. It can be taken over and handled properly by the medical profession.

In all probability one of the above or a combination of these will be worked out as time goes on. It is a question for the medical profession to decide just how much relation to and control of this work it wants.

—R. B. Adams, Sec.

REPORT ADVISORY COMMITTEE

January 2, 1929.

Dr. R. B. Adams, Secretary,
Nebraska State Medical Association,
Lincoln, Nebraska.

Dear Doctor:

As chairman of the Advisory Committe to the Legislative Committee, I beg to report that my committee has not been called upon to do any work during the year 1928.

Sincerely yours,
J. J. Hompes.

PROGRAM COMMITTEE REPORT

This committee, composed of R. B. Adams, chairman, Dr. J. S. Welch, Dr. W. J. Arrasmith, Dr. Floyd

Clarke and Dr. C. P. Fordyce, held its first meeting in December, 1927. This was followed by several other meetings and a great deal of other work by the members. As a result the program given at the Hastings Meeting was prepared. Dr. Dean Lewis of John Hopkins, Dr. Gilbert J. Thomas of the University of Minn., Dr. Wilber Post of Rush Medical College, Dr. W. H. Frost of the U. S. Public Health Service and Dr. E. C. Rosenow of the Mayo Clinic were our guests and gave addresses to the members.

One other new project was introduced at this meeting, namely three papers were given on subjects relating to Medical Economics. This, in the chairman's opinion, was well worth while and should be repeated.

—R. B. Adams, Chairman.

REPORT OF COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

There have been no additional calls for inspection of hospitals. You are probably informed by Dr. Colwell of the national association that their central offices have now field men who do the detailed work of inspection of hospitals. This will relieve your committee except in an advisory capacity and for certain details which the central committee may call upon us to perform. I think this is a very good change because we have in the past had considerable embarrassment at times where the ruling of the committee and the central organization was adverse to the pleasure of the staff of the hospital in question. Local relationship with the displeased staff made it difficult for the committee. Now the burden will rest upon the hospital inspector.

Your committee has been asked to investigate and report back at some later date concerning the post graduate work in the state. We are still busying ourselves with this task and we have little progress to report. We find, where states have tried this, such as Kansas, that certain major difficulties arise to impede the progress of the plan. Nowhere can we find a staff of teachers available, at the pleasure of the State Medical Association, to put on this work. The plan, which seems good in theory, has not yet found a working basis. We will have a report for you at a later time.

Your committee chairman is planning to attend the annual Congress at Chicago, in February. Any instructions or directions, which you may wish to communicate to your humble servant, will be gratefully received.

Yours truly,
J. S. Welch, M. D.

JOURNAL FUND

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS

Jan. 1, 1928, to December 31, 1928.

Direct Journal Receipts:		
Advertising Space		$5,245.77
Cuts		65.67
Copies Sold		9.80
Subscription to Journal		69.50
Dividend Cooperative Adv		283.05
U. S. F. & G. CO. To pay for Letterheads		10.97
Total Direct Receipts		$5,684.66
Share Dues Rec'd—General Fund		1,768.50
Total Receipts—All Sources		$7,453.16
Direct Journal Disbursements:		
Salaries:		
F. A. Long	$1,200.00	
R. B. Adams	1,300.00	$2,500.00
Publication Expense:		
	$ 11.87**	
Huse	4,089.02	
Baker	260.87	
Bank Chg.	1.94	
Uni. Press Clipping Bureau	42.00	4,405.70
Total Direct Disbursements		$6,905.70
Excess Cash Over Disbursements		$ 547.46
Cash on Hand January 1		$1,359.17
Total Cash on Hand		$1,906.63

**Refund on ad	$ 1.00
Gen. Fund for U. S. F. & G. Co's. Letterheads	10.87
	$11.87

STATEMENT OF INVESTMENTS

Jan. 1, 1928, to Dec. 31, 1928.

Investments on Hand Jan. 1, 1928:			
Balance in Account—Omaha Loan & Bldg. Assn.		$2,555.88	
Balance in Account—Standard Savings & Loan Assn.		1,462.20	
Balance in Account—Union Loan & Savings Assn.		1,679.52	
Total—January 1, 1928			$5,697.60
Additions to Investments During Year:			
Represented by:			
Dividend Credits — Omaha Loan and Bldg. Assn.:			
July 1, 1928	$63.87		
Dec. 31, 1928	65.50	$129.37	
Dividend Credits — Standard Savings & Loan Assn.:			
July 1, 1928	40.20		
Dec. 31, 1928	41.30	81.50	
Dividend Credits—Union Loan & Savings Assn.:			
July 1, 1928	50.39		
Dec. 31, 1928	51.90	102.29	
Total Dividend Credits During Year			313.16
Investment on Hand January 1, 1929			$6,010.76
Represented by:			
Balance—Omaha Loan & Bldg. Assn.		$2,685.25	
Balance—Standard Savings & Loan Assn.		1,543.70	
Balance—Union Loan & Savings Assn.		1,781.81	$6,010.76

GENERAL FUND

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS

Jan. 1, 1928, to Dec. 31, 1928.

Cash Receipts:		
Membership dues	$9,432.00	
Interest	51.85	
Western X-Ray—Wrong deposit	25.00	
U. S. F. & G. Co.—To pay for letterheads	10.87	
Total Cash Receipts		$9,519.72
Cash Transferred to Other Funds:		
Journal Fund	$1,768.50	
Defense Fund	2,358.00	

Journal Fund—Western X-Ray deposit—Advertising	25.00	
Total Cash Transferred		4,151.50
Balance available for General Fund		$5,368.22
Cash on Hand Jan. 1, 1928		1,687.89
		$7,056.11

Cash Disbursements:			
Salaries—R. B. Adams		$ 600.00	
Office and Administrative Expense:			
Rent	$ 180.00		
Telephone	87.75		
Printing	109.50		
Stamps	145.00		
Secretary of State Fee	1.00		
F. A. Long (1927 Expense)	35.50		
Insurance Premium	5.00		
L. C. Smith, Typewriter	75.00		
A. M. A.	12.00		
Hotel of Guests and Miss Scott	24.20	674.95	
Miscelaneous Expense:			
F. Tornholm—Refund on dues	8.00		
Councilor Expense	239.26		
Annual Meeting	35.20		
Huse Publishing Co.—Programs	48.32		
Program Committee	28.69		
Speakers for Meeting	282.04		
Service Charge—Peters	3.30		
K. S. J. Hohlen	500.00		
State Fair Committee	436.08		
Public Activities Committee	286.44		
Nebr. Central Bldg. & Loan Assn.	1,500.00	3,367.33	
Convention Expense:			
R. W. Fouts	26.53		
A. D. Dunn	26.53		
Alice Cary Gilchrist	155.00		
Dr. Welch	51.08	259.14	
Total Disbursements for Year 1928			4,901.42
Balance—Cash on Hand Dec. 31, 1928			$2,154.69

STATEMENT OF INVESTMENTS

Jan. 1, 1928, to Dec. 31, 1928.

Investments on Hand Jan. 1, 1928:		
Cash held by Peters Trust Co.	$ 216.35	
Securities held by Peters Trust Co.	4,000.00	$4,216.35
Balance in Account—Omaha Loan & Bldg. Assn.		1,329.46
Balance in Account—Conservative Sav. & Loan		2,619.80
		$8,165.61
Additions to Investments During Year 1928:		
By: Interest Credits—Peters Trust Co.	$ 175.00	
Transfer from Income Acct.—Peters	370.00	
Dividend Credits — Omaha Loan & Bldg.	67.26	
Investment — Nebr. Central Bldg. & Loan	1,500.00	
Interest Credits—Nebr. Central Bldg. & Loan	73.22	
Interest Credits — Conservative Sav. & Loan	119.20	2,304.68
		$10,470.29
Withdrawals During Year 1928:		
Trustee Fee Year Ending February 8, 1928	8.75	
Transfer to Principal Account—Peters	370.00	378.75
Investment on Hand Jan. 1, 1929		$10,091.54
Represented by:		
Cash held by Peters Trust Co.	$ 12.60	
Securities held by Peters Trust Co.	4,370.00	
	4,382.60	
Bal. in Acct.—Omaha Bldg. & Loan Assn.	1,396.72	
Bal. in Acct.—Conservative Sav. & Loan	2,739.00	
Bal. in Acct.—Nebr. Central Bldg. & Loan	1,573.22	10,091.54

DEFENSE FUND

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS

January 1, 1928 to Deember 31, 1928.

Cash Receipts:			
Share Dues Received from General Fund		$2,358.00	
Interest Received		28.50	
Total Cash Receipts			$2,386.50
Cash Disbursements:			
A. S. von Mansfelde, Salary	$ 300.00		
R. W. Fouts, Salary	300.00	$ 600.00	
Attorney Fees:			
R. F. Stout	600.00		
J. P. Baldwin	186.26		
H. A. Bryant	455.00	1,241.26	
R. W. Fouts, Expense	84.85		
Shaw-Walker, Filing Cabinet	80.15	165.00	
Total Cash Disbursements			$2,006.26
Excess Cash over Disbursements			380.24
Cash on Hand Jan. 1, 1928			706.21
Balance Dec. 31, 1928			$1,086.45

STATEMENT OF INVESTMENTS

January 1, 1928 to December 31, 1928

Investments on Hand Jan. 1, 1928:		
Cash held by Peters Trust Co.	$ 198.30	
Securities held by Peters Trust Co.	1,500.00	
Total Jan. 1, 1928		$1,698.30
Interest Credited During Year		123.75
		$1,822.05
Cash Transferred:		
Trustees Fee for Year Ending 2/8/28	6.25	
Transferred to Principal Account	300.00	306.25
		$1,515.80
Additions to Investment:		
Transferred from Income Account	300.00	300.00
Investment on Hand Jan. 1, 1929		$1,815.80
Represented By:		
Cash Held by Peters Trust Co.	15.80	
Securities Held by Peters Trust Co.	1,800.00	$1,815.80

THE NEBRASKA STATE MEDICAL JOURNAL

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R. B. Adams, M. D., Business Manager,
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Vol. XIV March No. 3

ROSTER OF OFFICERS

Dr. B. R. McGrath, Grand Island, President	1929
Dr. Frank S. Owen, Omaha, President-Elect	1930
Dr. E. L. Brush, Norfolk, Vice President	1929
Dr. W. R. Boyer, Pawnee City, Vice President	1929
Dr. R. B. Adams, Lincoln, Secretary-Treasurer	1930

COUNCILORS

Dr. R. D. Bryson, Calloway	1929
Dr. L. W. Rork, Hastings	1929
Dr. C. A. Selby, North Platte	1929
Dr. F. W. Plehn, Scottsbluff	1929
Dr. A. P. Overgaard, Omaha, Secretary	1930
Dr. H. J. Lehnhoff, Lincoln	1930
Dr. C. P. Fordyce, Falls City	1930
Dr. A. E. Cook, Randolph	1930
Morris Neilsen, Blair	1931
Dr. W. J. Douglas, Atkinson	1931
Dr. Frank Tornholm, Wahoo, Chairman	1931
Dr. H. E. Potter, Fairbury	1931

DELEGATES TO A. M. A.

Dr. A. D. Dunn, Omaha	1929
Dr. R. W. Fouts, Omaha	1930

DELEGATE, COUNCIL ON MEDICAL EDUCATION, A. M. A.

Dr. J. S. Welch, Lincoln	1929

MEDICO-LEGAL DEFENSE COMMITTEE

Dr. Roy W. Fouts, Omaha, Chairman	1929
Dr. C. A. Hull, Omaha	1930
Dr. R. B. Adams, Lincoln, Secretary	1930

Note: In case of suit notify secretary at once.

THE ANNUAL COUNCILOR MEETING AND REPORT

We are sometimes asked what becomes of the eight dollars we pay for dues. Why is so much money needed? The answer is in the report of the councilor meeting published in this issue of the Journal. It is the duty of every member to study this report and inform himself. The Nebraska State Medical Association has become a small giant functioning in various activities for the good of the profession and the public welfare. The council and the several standing committees are the pulsating, functioning parts of the organization from one annual meeting to another. The delegates to the American Medical Association constitute a committee that keep us in touch with the activities of this great organization. Read the delegates' report. The public activities committee is functioning in a surprisingly active manner, by promoting health education courses at the state normal schools, at the state university, at the annual meeting places of the Nebraska State Medical Association and by health exhibits at the state fair. The report is well worth reading. The program committee functions quietly and effectively. Last year's program was one of the best ever presented. The work of the campaign committee and also of the legislative committee are not matters often put into print; but the functioning of these committees is well known to those who keep in touch with association affairs. The committee on medical defense is active throughout the year and handles several dozen alleged malpractice cases effeciently. The financial report shows an annual budget well above nine thousand dollars, with over seventeen hundred dollars transferred to the Journal fund, over twenty-three hundred dollars to the defense fund and smaller sums to various committees and activities for the good of the profession. The report also shows a balance on hand in the general fund represented by investments of ten thousand dollars. The Journal fund has investments of over fifty-six hundred dollars, while the defense fund has investments of over eighteen hundred dollars. This shows a prosperous condition and an ability to undertake and handle new problems. Study the report carefully and be convinced your eight dollars is going to a good purpose and is being handled by your servants in an efficient manner.

You pay from fifteen to thirty dollars annually to belong to your golf club, or to one of the luncheon clubs, and never ask why it costs so much; why should one question the eight dollars that goes to the organized profession, concerned with one's life work?

It takes money to get worth while things done.

THE LATE COLONEL JOHN. M. BANISTER

John M. Banister, Omaha, Nebr.: Medical Department University of Virginia, 1878; ophthalmologist and otolaryngologist in Omaha since 1910; previous to that for thirty years in the medical corps of the U. S. Army in home and foreign service; president, Nebraska State Medical Association, 1919-1920; died January 31, 1929, following a long standing cystitis, which, with an acute exacerbation, terminated in hypostatic pneumonia; aged seventy-four years.

JOHN M. BANISTER

Colonel J. M. Banister, Medical Department, U. S. Army (retired), was born at Greensboro, Alabama, the son of an Episcopal minister. In 1874 he graduated from Washington and Lee University and then attended the University of Virginia Medical College and received his medical degree in 1878. He entered the Medical Corps of the U. S. Army in 1879 and served with distinction until his retirement, after over thirty years' service, in 1910. During his service he developed his knowledge of opthalmology by studying in New York and Philadelphia. While stationed at Fort Leavenworth he carried out a series of tests on healthy soldiers which established a new standard in regard to the dynamics of coordinated eye movements. He early recognized the value of the Bassini operation and it was through his efforts that it was introduced into the army and became the authorized procedure for hernia. When in command of the hospital of the military academy at West Point he modernized and equipped the operating room and used his operative skill to give the cadets the benefit of skilled, modern surgery. In the Phillipines, while chief surgeon of the Department of Luzon, and later in command of the First Reserve Hospital, he met the problems of tropical medicine fearlessly and successfully.

He entered the army as a lieutenant and on retirement he ranked as a full colonel.

Whereever he served, in whatever situation, he fulfilled his duties with intelligence, courtesy, skill and courage.

The thousands of his friends among the enlisted men and officers bear witness that he ever upheld the highest traditions of medicine and of the U. S. Army.

Doctor Banister was president of the Nebraska State Medical Association in 1919-1920, and always one of its most active members. He was a member of the American Academy of Ophthalmology and Otolaryngology, a Fellow of the American College of Surgeons, and of the American Medical Association. He attended the International Congress of Surgeons at Moscow in 1897 and read a paper on the Bassini operation before that body. He was a member of the Omaha Professional Men's and University clubs.

My own intimate association with him for nineteen years enables me to testify to those qualities which have endeared him to all members of this Association. His upright, dignified bearing was symbolical of the spirit whose integrity, honor and uprightness impressed themselves immediately on his fellows. He was often spoken of by his friends as a gentleman of the old school. James Blair, the founder of Williams and Mary College, and John Blair, Jr., one of the signers of the Declaration of Independence, were members of his family and his ancestors were among the early English settlers of Virginia and represented the best traditions of the south.

But added to all, his love for his fellows gave that added charm to his innate courtesy for which he was so well known.

Our heads are bowed in sorrow because he has left us, but who can deny that his remarkable embodiment of what was upright, kind and true will increasingly inspire our profession, even though he is gone.

He was buried from the First Presbyterian church with a military ceremony in charge of Major General Harry A. Smith, commander of the Seventh Corps area.

The sun has gone
And yet, now comes the beauteous portion of the day
Lingering but a brief half hour, and then the night.
My friend has gone
And by the glorious coloring of his life and way
Inspiring us forever with increasing light.

—H. B. Lemere.

LEGISLATIVE MATTERS

The profession is interested in what transpires in the legislature. If results are to be expected this must be an active interest. The legislative committee must be supported in efforts to pass or kill the following bills as indicated. Write to your senators and representatives at once. They want your support in whatever they do on these measures.

The following three measures should have your active support:

H. R. No. 186, allowing the Board of Control to fix salary of Superintendents of the Nebraska Hospitals for Insane, and the Warden of the Penitentiary.

H. R. No. 527 creates State Anatomical Board, and provides for the distribution and the use of certain dead human bodies for educational purposes.

H. R. No. 543, gives the Department of Public Welfare power to inspect certain additional homes, institutions, etc., amends existing laws.

The following Bills should be killed. Write your representative at once.

H. R. No. 253, introduced by Stanley Wright of Box Butte. Provides that all health boards, State, County or Municipal, shall comprise not more than two doctors. One from a medical school and one from a drugless school of healing, one competent business man and four or more sanitary engineers qualified by technical training and knowledge. In the event of an insufficient number of such trained engineers, it shall be the duty of those empowered, etc. to appoint men of practical experience in sanitation such as expert or master plumber, etc. Further—the public health director of the state, as well as the health commissioner of city or county, shall in every case be a competent, experienced, sanitary engineer who is not a graduate of any system or school of healing, etc.

Senate File No. 152, introduced by Senator McGowan of Norfolk. An Act to amend;—provides that a witness in a civil action may be required to respond to a subpoena of the district court any place within the state upon payment to him in advance of the mileage fees provided by law for the purpose of giving testimony before the court, but for taking his deposition he may not be required to respond to a subpoena outside of the county where he resides, or where he may be when the subpoena is served upon him.

The Newton Bill, in the National Congress, H. R. No. 14070, a Bill to provide a Child Welfare Extension service, and for other purposes. Your Legislative Committee urges you to wire or write your United States Senator and Congressman, asking him to oppose this Bill. The A. M. A. is also opposing this Bill.

Several other vicious bills have been killed in committee and need not here be mentioned.

ARE WE AFRAID OF IMPORTED TALENT?

A correspondent writes that last March he secured as associate, a Dr. J. A. B., from the Mayo Clinic, where he had finished a three year fellowship and in addition three months in clinical pathology. He is a graduate of the University of Manitoba and had a good internship at Ft. Williams, Ontario. He is a native of Canada, but had taken out his first naturalization papers three years ago. He is licensed in California where he had practiced for about a year before going to the Mayo Clinic. When he came to Nebraska he filed his papers with the Board and was refused a license pending completion of his citizenship—hence he could not engage in practice in this state. The party referred to is a high class man in every respect, says our correspondent, and he wonders why Nebraska should have such silly regulations as to keep out high class man three years after he has applied for citizenship and has lived in the country over five years: while on the other hand there are many doctors in the state who are a disgrace to the profession and are poor citizens who are not restricted or restrained in the least in the practice of medicine.

It seems not only unfortunate but unjust to have such a rule in the Department of Welfare: but it is there. Under existing laws a foreigner who comes to this country and applies for naturalization may vote at local and state elections and is accepted in practically all respects as one of us in social, civic and commercial matters; should the Department of Public Welfare impose such restriction on medical men! Why this injustice?

This regulation must date back to the period immediately succeeding the war and must have had its inception in the fear that the profession would be overrun by foreigners, which is cowardly.

Let us show our liberality by doing away with such drastic regulations. "A man is a man for a' that".

POST MORTEMS

Once upon a time the doctor was prudent and discreetly buried his mistake, and he was loved by the community and his patients. The modern doctor is scientific, and fearlessly has a post mortem examination made before he buries his mistake. And he is sued by his patient's relatives and loved by the relatives' lawyer.

It appears to be difficult for the medical profession to realize that some desirable scientific programs are legal hazards.

Post mortem examinations are now a requirement for Hospital Standardization. Post mortem examinations may be scientific assets, but they are legal liabilities.

No matter how the "autopsist" is secured, he is legally an employee of the immediate relatives of the autopsy subject.

The immediate relatives are legally entitled to, and may demand, a report from the physician who made the autopsy. This report must be the same as the one made for record.

This report is sufficient medical evidence to file a suit, and get the suit before a jury, for alleged mal-practice or manslaughter.

The employee, that is the doctor or layman, who made the autopsy, can be subpoened and compelled to state what he saw, what he did and what he said.

The doctor who did the autopsy is a plaintiff witness and be be so used in whole or part in the examination of any defendent witness.

The physician or physicians who attended the patient is accountable and any evidence disclosed by the autopsy which may be prejudicial to him, or them, cannot be prevented from appearing in the trial.

Mal-practice is based upon negligence. Medical negligence in law, is doing something that a reasonably prudent doctor would not do under the circumstances, or failure to do something that a reasonably prudent doctor would do under the circumstances.

Post mortem procedures may supply readily available incriminating evidence. In every case, the accountability should be kept in mind and there should be a reasonable certainty that the scientific knowledge to be gained outweighs the legal risk.

NEBRASKA SECTION, AMERICAN COLLEGE OF SURGEONS

The annual meeting of the Nebraska Section of the American College of Surgeons will be held in Lincoln, Thursday and Friday, March 14th and 15th. All physicians, whether members of the College or not, are invited to attend. Headquarters for the meeting will be Cornhusker Hotel, 13th and M Sts.

Arrangements are being made for some nationally known speakers. There will be operative clinics at the various hospitals Thursday and Friday mornings.

Detailed information and programs will be mailed out later.

A QUESTION OF X-RAY ETHICS AND COMPENSATION

A medical friend out in the state sent us the following question for a judicial opinion under the evident impression that an editor is necessarily an authority:

> "What is the custom or habit of the profession in compensation cases when the insurance company demands the x-ray film for diagnosis by their own staff?
>
> "Had a telephone man come in yesterday morning demanding to see the x-ray of one of its employees. Had informed him that there was no fracture. The gentleman looked at the film very critically and then announced that he would send the patient to Omaha.
>
> "This morning have a request from an insurance company in Iowa for a film of a fracture of the fibula.
>
> "If we are not able to interpret our films why not send in our thermometers and have these men see whether we are able to read a thermometer correctly. One is as logical as the other.
>
> "Would appreciate your comment on the above question."

To which we answered: "I am at a loss to answer, for this question has not come before me in my own practice. I do not know what the practice is in such cases. I would think, however, off-hand, that in case the company wants to check up on the diagnosis, that courtesy would prevail and one would send the film.

"Such things often are very aggravating and I can see good cause for resentment; but after all, one had better swallow his pride and comply with the request.

"It is very similar to the references we are so often asked to fill out by insurance companies for our friends who are under consideration for appointment as local examiners. We should be paid for doing so; yet we always, more or less cheerfully, do it without thought of compensation."

Any member desiring to discuss this question will be granted space to do so.

ORGANIZING FOR EFFICIENCY

Before the annual Conference of State Association Secretaries and Editors at the headquarters of the American Medical Association, Chicago, in November last, Dr. H. H. Shoulders, secretary-editor of the Tennessee State Medical Association read a very able paper under the title above given. This and other papers brought out full and free discussion of organizational problems in the several states, in which the delegates from Nebraska participated as follows (*American Medical Association Bulletin*, Jan., 1929):

Dr. R. B. Adams, Nebraska: Nebraska is another one of the states situated a good deal as Tennessee is. This state is 450 miles long and 250 miles wide, with about a million and a third population, and probably two-thirds of that population is in the eastern third of the state. There are ninety-three counties, one of which has about 3,000 population and is bigger in area that Rhode Island. There are so few physicians in many of the counties that they cannot organize. Because of the immense distances, they cannot combine in those sections of the state.

We have been wondering for a number of years what we could do with those counties. The men out in those county societies still belong to the organization and are intensely loyal to the state society, but they say they are not getting anything for their $8 a year, which is true.

We have devised another method of helping those men. Instead of trying to organize those societies and having paper societies, we are trying to develop some work that will result in good to them. So far we have done two things that we think will eventually help a whole lot. One of them is that we are carrying a course of instruction to the state normal schools. Every year a course is given, and physicians in the community where the state normal school is located appear on the program and give talks on health and medicine. We are trying to teach those girls and boys who are going to be the country school teachers of the state, to have a health consciousness, and in their work with the children they will develop the idea of looking to the family physician for the things they should look to him for. We are hoping that this will bring good results.

We are also holding exhibits at our state fair. We have a state fair which draws about a third of the population of the state, and we have an exhibit there. This year they turned over an entire building to us, and we were swamped. As a result of that, there were some hitches in the operation, but those can be ironed out. We are trying to do the same thing there with the people that we are doing through the normal schools. We have a baby show, we have periodic health examinations, we have health talks and we have stereopticon and moving picture shows on health subjects.

The reaction we get is: "Why haven't you been doing this for a long time?" The people are crazy for it.

Last fall we conceived the idea that we would give one person from each county a health examination free of charge. That examination is organized according to the suggestions of the American Medical Association, with the idea that the family physician does the examining. The person is not examined by a group of specialists; he goes to one man, who makes the examination. We have x-ray and laboratory men, of course.

Instead of examining one man from each county, we had such a demand for examinations that we could not handle them. The physicians examined all day long during the seven or eight days of the fair, and then they did not examine everybody who wanted to be examined. We think the result of that is having a good effect with the public. We are teaching them to look to the health of their families and to go to the family physician for it.

Dr. F. A. Long, Nebraska: I should like to tell about a county society in rural Nebraska. The Madison County Medical Society was organized about twenty-four years ago. Gradually we came to interest ourselves in having a program and meeting more often, though our first function had been principally that of paying dues. Following the war, the membership in several of the counties around us got small and they could not keep sufficient interest to organize and have a county society, so they asked to join us, and we now have five counties belonging to the Madison County Medical Society.

We had programs of our local men for several years until interest began to wane. We did not particularly care to hear our neighbors tell us what they knew when we knew a great deal more, we thought, so we asked men from outside to come in and give our programs. For several years that has worked wonderfully well. We get men from Sioux City, Lincoln and Omaha to come and give us programs, and they are glad to do it. Occasionally, we have some one from Kansas City or Chicago.

There is one drawback, however, and that is that it does not bring out the local men to the extent that it should. The secretary has an alphabetical list of members, and out of that alphabetical list, at the beginning of each year, he appoints a committee for each monthly meeting during the year. Every one knows who is on the committee for every month of the succeeding year, and the committee is responsible for the program. I have in mind advancing a proposition for next year that we continue asking men from outside to come and give part of the programs, but that the committee be required to present part of the program, either present a case, or several cases or read a paper.

We have fifty members, and we have from thirty to forty present at each meeting. We think the plan works well.

Dr. R. B. Adams, Nebraska: Four or five of the societies are solving the problem in their districts, but they will not solve the problem in the part of the state that I spoke about. One point that Dr. Long did not mention about his society, a point brought up, I believe, in Dr. Shoulders' paper, is that when you combine four or five societies, the societies that are going in with a stronger combination lose their identity and delegates to the state medical association. In these organizations in our state (I do not know whether this is legal or not, but it works), there is a compact society and each local society maintains its organization, but they meet together for convenience. Each society is still entitled to its representative in the state association. The five counties that Dr. Long belongs to legally would be entitled to two delegates, but from our association they usually send five.

CHRONIC HEREDITARY EDEMA: MILROY'S DISEASE

Chronic hereditary edema consists in a firm edema. It is limited in extent to the toes or to a part or the whole of one or both feet, or of one or both legs. It never extends above Poupart's ligament. It is not painful or tender and is without constitutional symptoms. It arises from no apparent cause. Hereditary transmission is conspicuous in its behavior. The edema is permanent, although it subsides to some extent by rest in bed. It occurs in both sexes. It is not inimical to long life. Some observations have suggested a bad nervous make-up as a predisposing cause of the edema. It is the opinion of W. F. Milroy, Omaha (*Journal A. M. A.,* Oct. 20, 1928), that neither arrested mental development nor a feeble or perverted nervous system is an etiologic factor in this trophedema. Nor does the edema induce enfeebled physical development. It seems probable that there is a local cause for the edema. This might be venous obstruction or thrombosis, lymphatic obstruction, or an error in the activity of the blood vessels or lymphatics dependent on a perverted nerve supply. Raynaud's disease, urticaria and angioneurotic edema, it is believed, owe their strange existence to vasomotor neuroses. These differ clinically in essential particulars. May not other apparently wholly different and extraordinary manifestations of vasomotor activity occur? It seems very possible that this trophedema is closely allied to the other conditions just named and is another whim of the vasomotor system. All sorts of internal remedies and local treatment for the cure of this condition have been tried without any benefit whatever. The treatment of the "acute attacks" is symptomatic and palliative. For the edema, firm support by bandage or other appliance is of great value.

PERINEAL PROSTATECTOMY UNDER SACRAL ANESTHESIA

Edwin Davis, Omaha (*Journal A. M. A.*, Nov. 24, 1928), reviews 121 consecutive cases of perineal prostatectomy under sacral anesthesia with no deaths. The method of anesthesia used has been the so-called sacral block, including injection through the sacral hiatus (caudal anesthesia) as well as through the first, second and third sacral foramina on either side. Each patient received a preliminary hypodermic injection of morphine, ¼ grain (16 mg.), followed by a caudal injection through the sacral hiatus of approximately 40 cc. of 1 per cent procaine hydrochloride, and supplemented by the injection of approximately 10, 8 and 5 cc. of the same solution into the first, second and third sacral foramina on either side. There has not been a single case requiring auxiliary gas inhalation anesthesia during the last fifty-one consecutive cases, and out of the last hundred cases gas has been necessary during the final stages of enucleation in only three instances. Careful attention to the factors of preliminary preparation, sacral anesthesia and hemostasis has resulted in reducing the immediate mortality of prostatectomy to almost nil. Delayed hemorrhage has occurred in five out of 176 cases. Sudden, profuse hemorrhage, occurring as late as the tenth postoperative day, and interrupting an otherwise smooth convalescence, is a menace which cannot be foreseen or prevented. This occurs probably as the result of infection and slough, and constitutes a grave emergency, in that its seriousness may not be recognized until the patient has gone into collapse. Hemorrhage of this character is a complication which should not be temporized with and which calls for immediate active measures directed toward mechanical control. In three of the five cases, a suprapubic incision was made under local anesthesia in order to permit evacuation of clots and the reintroduction of a hemostatic bag or pack. Hemorrhage of this character was indirectly responsible for one of the deaths in that, although measures directed toward control were successful, the patient's resistance was lowered by loss of blood to such an extent that gangrenous infection of the incision set in, resulting in general sepsis and death ten days later. Eighty-one of 100 patients replying to inquiry unequivocally stated that they considered themselves well, while there were fifteen improved and four unimproved. An analysis of the data indicates that the majority of those who reported themselves as "improved" rather than "well" did so on account of varying degrees of frequency of urination. Two patients had a sufficient degree of incontinence to be the cause of considerable inconvenience. One case of persistent complete urinary fistula resulted from the formation of a fibrous stricture or septum at the apex of the prostate. There has been no case of immediate postoperative urethrorectal fistula. In the case of retention following prostatectomy, the condition was later found to be due to an unsuspected vesical carcinoma occurring in the region of the prostatic orifice.

EDITORIAL PARAGRAPHS

Five thousand people die annually in India from snake-bite; last year twenty-seven deaths from snake-bite were reported in the United States.

Be reminded that your income tax report must be in the Omaha office by March 15. Expenses for attending medical society meetings are now deductable.

The First International Congress on Mental Hygiene will be held at Washington, D. C., May

5-10. Mr. Clifford W. Beers, 370 Seventh Ave., New York City, is secretary-general.

The Northwestern Railroad Co. tendered all their surgeons a free trip with all entertainment, to Rapid City, last month, where a surgeons' meeting was held at the Alex Johnson Hotel.

A meeting of unusual importance will be that of the Nebraska Section, American College of Surgeons, Cornhusker hotel, Lincoln, March 14-15, to which all Nebraska physicians are cordially invited.

It is authoritatively stated that the last U. S. Maternity and Infancy funds available for Nebraska will be used to send a woman physician into many counties to hold Child Health Conferences and to advise expectant mothers.

Contrary to what might have been expected from early reports the English King seems to be recovering; but now that he is recovering a mad scramble is on for the credit for his recovery under the guise of ruptured medical ethics.

Following close upon the heels of the propaganda to promote the sale of cigarettes by decrying the use of sweets, comes the National Food Products Protective Committee with letters and circulars to combat the tobacco propaganda.

In line with the decision of the courts of New Jersey, Attorney General Sorenson has issued an opinion that only a licensed physician and surgeon has the right to operate an x-ray machine to give treatment and to interpret x-ray pictures.

Any one having his ear attuned to the signs of the times must notice that a more vigorous policy of enforcement of quarantine and of vaccination prevails in the state bureau of health, as evidenced in news items from at least three points in the state where epidemics prevail.

Recently an S. O. S. call went out from Grant county for a physician, one of the county's two physicians having been taken ill while influenza was prevailing. So many responses came that the county now wants it known that they are supplied. This looks as if, after all, physicians will go to the rural districts to practice.

Wonder how many readers of the *Nebraska State Medical Journal* observed last month that the Journal arrived in an envelope instead of being wrapped? We also wonder how much better you like it this way. It is thought a worth while improvement. It costs the Journal fund several hundred dollars additional each year.

In an article in the *International Journal of Surgery*, for January, 1929, Dr. Fred H. Albee, internationally known orthopedist, New York city, highly commends the method of Dr. H. W. Orr, Lincoln, for treating osteomyelitis and cites several cases treated by the method. Albee suggests that Orr's results may be explained by the action of the bacteriophage.

Propoganda started by Dr. Palmer Finley, Omaha, in his Presidential Address, advocating a better and fuller course of teaching in obstetrics, before the American Association of Obstetrics and Gynecology at Toronto, last summer, is attracting the attention of the medical press and already three colleges, Iowa, Indiana and Long Island, have adopted more comprehensive courses.

The annual meeting of the American Association for the Study of Goiter will be held this year at Dayton, Ohio, on March 25, 26 and 27. The primary object of this association is to bring together each year men who are especially interested in the study of goiter and its associated problems. Members of state and provincial medical societies are eligible and cordially invited to participate as attending members.

Julia Lathrop of the Children's Bureau says in The Women's Journal that for the year ending June 30, 1929, $182,102,215 have been appropriated for cooperative projects or for outright grants to states and of this amount $1,240,000 is for Welfare and Hygiene of Maternity and Infancy under the Sheppard-Towner Act, and compares the two to show the silliness of objecting to the Sheppard-Towner Act on the theory of State Medicine.

The recent trial of three powwow doctors at York, Pa., for murder and their conviction, reminds the writer of his boyhood days in the Lehigh Valley where belief in witches and sorcery were at that time more or less common. If a cow gave bloody milk she was thought to be bewitched. If a horse became sick and the illness could not be readily explained by rational methods he was bewitched. Andy Graver was the Witch doctor of the community and his services were in great demand over a large territory. A neighbor's horse became ill, refused to eat, etc. The witch doctor was sent for. He explained that if an augur hole were bored through the feed trough and a wooden pin placed therein and driven in harder every day the witch would get sick. The pin was driven further each day with much enthusiasm and after a number of days a man in the community became ill with colic—and the neighbors said: "I told you so."

THE SOCIETIES

Regular meeting of the **Omaha-Douglas County Medical Society,** January 22, 1929.

Meeting was called to order by Dr. Frank M. Conlin who presided in the absence from the city of both the president and vice president.

Dr. C. A. Roeder presented a case showing the complete removal of the right half of the neck for epithelioma of a branchial cleft remnant. This was discussed by Dr. Johnson.

Drs. George W. Pritchard and C. H. Waters reported a case of ruptured uterus with specimens. This was discussed by Drs. Wearne and Bridges.

Dr. Conlin then presented the guest speaker of the evening, Dr. Frederick A. Willius of Rochester, Minnesota, who talked on "Digitalis in Medicine". This paper was discussed by Drs. Kleyla, Anderson, Sachs, Heagey, Fitzgibbon, Bridges and Warren Thompson.

The **Omaha-Douglas County Medical Society,** February 12, 1929.

The meeting was called to order by President Langdon sharply at eight o'clock and he announced that all meetings would be called promptly at eight o'clock, and would be adjourned promptly at ten o'clock unless those in attendance signified their desire to continue.

The president also announced that the Society would go to Lincoln on Tuesday evening, February 19th, to put on a return program for the Lincoln Society and urged all members who possibly could, to go down.

Dr. Lemere read resolutions of regret at the death of Dr. Banister and the report was adopted by the Society.

Dr. H. B. Hamilton presented the first paper on the program, entitled "Pediatric Clinic". This was discussed by Drs. Clark and Henske.

Dr. C. A. Roeder gave a talk entitled "A Post-operative Review of 1400 Resections of the Thyroid Gland" illustrated by lantern slides. This was discussed by Drs. W. A. Killins, Rodney Bliss and Donald Macrae.

—Herman M. Jahr, Sec.

The annual meeting of the **Dawson County Medical Society** was held at Gothenburg, January 18, after a banquet at the Hotel Houston. Dr. A. W. Anderson, Lexington, was elected president; Dr. R. S. Wycoff, Lexington, secretary-treasurer. Dr. R. D. Bryson, Calloway, read a paper on "Focal Infection".

The regular meeting of the **Richardson County Medical Society,** January 11, was held in the club room of the Hotel Weaver, Falls City, after a dinner. Dr. C. B. Fordyce, Falls City, read a paper on Lord Lister; Dr. J. M. Greene, Falls City, a paper on Diseases of the Thyroid. Dr. M. L. Wilson, Falls City, was elected president; Dr. C. L. Hustead, Falls City, secretary-treasurer. The society has 23 members out of a possible 26.

The **Lincoln County Medical Society** met Wednesday, Dec. 12, 1928. Officers were elected for 1929 as follows: Dr. J. B. Redfield, president; Dr. H. H. Walker, secretary-treasurer; Dr. C. F. Heider, delegate.

Meetings will be held once a month and medical and surgical topics will be discussed. The meetings will be in the form of a round table discussion following a noon day luncheon and will be held the second Thursday in each month.

HUMAN INTEREST TALES

Dr. and Mrs. A. F. Jonas, Omaha, have gone to Florida, Cuba and the Canal zone.

Dr. Max Emmert has become chief of staff of the Evangelical Covenant hospital, Omaha.

Surprise, Nebr., village of 300 people in Butler county, is reported without a physician.

Dr. Ole Grothan, St. Paul, Nebr., submitted to an operation for strangulated hernia recently.

Dr. P. J. Gustin, recently connected with Dr. Clyde Roeder, Omaha, has located at Bedford, Iowa.

Dr. E. B. Hamel has been appointed city physician of Hastings, vice Dr. J. V. Beghtol, resigned.

After a service of 16 years as city physician of Hastings, Dr. J. V. Beghtol, recently resigned.

Dr. and Mrs. W. F. Callfas, Omaha, have returned from a trip to Cuba, the West Indies and Panama.

Dr. G. H. Gilmore, Murray, has retired from practice and is to be succeeded by Dr. John T. Eagleton.

Dr. and Mrs. C. C. Gafford, Wymore, have gone to southern California for the remainder of the winter.

The sympathy of the profession goes out to Dr. and Mrs. F. L. Wilson, Stuart, in the loss of their young son.

Dr. LeRoy Crummer, Omaha, has given a series of lectures on the heart before medical students and medical societies in San Francisco during the winter.

Dr. P. H. Bartholomew, for some years in charge of the division of social hygiene of the bureau of health, has been appointed Chief, Bureau of Health, of this state.

Dr. Nettie Gerish, Omaha, has been awarded $15,000 by the district court in her suit against the Hinchey Laundry company for personal injuries sustained in an auto accident.

Coincident with their removal to the Stuart building, Lincoln, the clinic of Welch, Rowe and Lehnhoff announces the accession of Dr. Elmer M. Hansen, in the practice of obstetrics.

The Campbell Clinic building at Norfolk was dedicated with appropriate ceremonies, January 20, and is now in full use. The building is of the Old English type of architecture, has 22 rooms, most of them for examination and laboratory use.

The Douglas County Woman's Auxiliary elected Mrs. B. B. Davis, president, for the ensuing year. This splendid organization is doing welfare work at the Douglas county hospital and has taken up free school lunches to help give milk and lunches to poor hungry waifs who come to school without breakfast and with no lunch. At a recent meeting fifty dollars was appropriated toward this work.

NECROLOGY

Banister, John B., Omaha: (See Editorial, page 129).

CARDIAC DISEASE IN PREGNANCY

For purposes of obstetric control, Burton E. Hamilton and Foster S. Kellogg, Boston (*Journal A. M. A.,* Dec. 22, 1928), separate all the cardiac clinic patients into three classes: In class 3 are those definitely without heart disease. The majority of these are patients with cardiac neurosis or neurocirculatory asthenia. Class 2 contains all the "possible cardiacs" and those believed to have rheumatic heart disease, congenital heart disease, or any other cardiac condition, but who do not show clear signs of severe injury. Cardiac patients in class 3 and class 2 have been treated obstetrically as though they were normal so far as the heart is concerned. Class 1 contains patients with severely injured or disordered hearts. With very few exceptions, they are so classified because they have a considerable enlargement of the heart, or a diastolic murmur, or both. A very few have been grouped in class 1 because of a very loud or harsh systolic murmur accompanied by a thrill, with usually additional minor signs of an injured heart, or because of serious disorder of the heart beat without other signs of an injured heart. In a consecutive series of 252 class 1 patients at the Boston Lying-In Hospital there have been twenty-one maternal deaths, and seventy-three have shown signs of a failing heart. The authors further group in class 1 patients who will tolerate pregnancy well from those who will not. They have found that patients who have or have had heart failure, or some much less common complication, such as an auricular fibrillation or a hypertension, do not tolerate pregnancy well. They have grouped these as class 1 A, and believe that these indications justify warning a patient against pregnancy, therapeutic abortion of the patient if seen early in pregnancy, and sterilization when practicable. They have observed that a number of noticeably small women with mitral stenosis have not, as a group, borne pregnancy well. They have found from experience that satisfactory medical control of class 1 patients in pregnancy consists principally in rigid observance of a few fundamental rules in regard to accurate diagnosis, early recognition and stubborn prenatal control of cardiac patients. The causes of congestive heart failure are usually (1) overexertion and (2) infections, such as colds, grips and tonsillitis. At times, patients develop heart failure without being aware of it. The first reliable physical sign is nearly always persistent rales at the lung bases. Class 1 cardiac patients should be examined, with this sign particularly in mind, at least once a week throughtout pregnancy for early discovery of failure. The disregarding of this sign has been clearly shown to us to be a dangerous matter. The earliest important symptom of failing heart of which the patients are aware is often cough on exertion or after lying down, and sometimes hemoptysis. Patients often think that they have a cold. They should be instructed to report at once should cough or hemoptysis occur. When failure once occurs, patients belong in the hospital or under hospital conditions until delivered. This should be a law. Patients should be advised strongly to have pregnancy interrupted if failure occurs early in pregnancy. If failure occurs in the last months of pregnancy and is promptly relieved by rest in the hospital, the patient may be encouraged to continue the pregnancy in bed in the hospital until the child is viable. She should be delivered as soon as there is reasonable evidence that the child is probably viable. The authors believe definitely that the easiest way to deliver a patient with heart disease, so far as the strain on the heart is concerned, is by cesarean section. Nevertheless, because of the feeling that this adds necessarily a risk in itself, they try to avoid a cesarean operation as much as they dare. They select it only for those in heart failure, unless they are advanced in labor when first seen, and for obstetric reasons. The majority of their primiparas with cardiac disease have been delivered by cesarean section. The other patients have been eased through the first stage by means of morphine, scopolamine and obstetric ether and have been delivered at full dilatation by forceps, rarely by version. There will never be a really satisfactory method of delivering a woman in heart failure. All methods are more or less dangerous. The same patient, when not in failure, is a much safer risk for any method. The most important thing is prenatal control, which will have the patient in good condition at the time of delivery. The first common trustworthy sign that a cardiac patient is not doing well in pregnancy (persistent rales at the lung bases) is actual evidence of failure itself. Pregnancy should not be allowed to continue if the patient has or has had failure, or if she has a dangerous complication. If she does not have these complications, she should be guarded against failure. If it occurs, in spite of all precautions, it should be recognized early, relieved, and the patient delivered before it returns.

PLAYING FAVORITES

A Scotsman, not feeling so well as usual, called on his family doctor, who looked him over and gave him some pills to be taken at bedtime. Whisky was also prescribed for his stomach's sake, a small glass to be taken after each meal.

Four days later Sandy again called on the doctor, stating he was feeling no better.

"Have you taken the medicine exactly as I instructed?" the doctor inquired.

"Weel, doctor," replied the patient, "I may be a wee bit behint wi' the pills, but I'm six weeks ahead wi' tha whusky."

"My friend," remarked the physician, "you are suffering from a chronic complaint."

"I know it, Doc, but please lower your voice," cautioned the patient. "She's in the next room."

—Selected.

ANNUAL MEETING, OMAHA, MAY 14, 15, 16

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THE ETIOLOGY OF GASTRIC AND DUODENAL ULCER*

A. C. IVY, M. D.,
Professor of Physiology, Northwestern University,
Chicago, Illinois.

The etiology of gastric ulcer is a problem that is of much interest to many investigators, and is one that is coming up daily in the practice of clinical medicine and surgery. It is a problem that I have been personally interested in and performing experiments on for over ten years. I do not believe that any one who has spent considerable time investigating this problem believes the problem is settled. We know that there are a number of factors which are responsible for delaying the healing of acute ulcers of the gastric mucosa. Which is the factor of prime importance, or whether there is a single factor of prime importance, is a question we cannot answer precisely at the present time.

There are a number of current views relative to the etiology of gastric ulcer. One view is that gastric and duodenal ulcers are caused by the corrosive action of hydrochloric acid-pepsin on areas of mucous membrane which have had their normal resistance lowered. Another view is that ulcer is caused by specific organisms. Some hold that it is due to neuro-atrophic disturbances—that the sympathetic nerves are not functioning correctly, which disturbs the metabolic activity of the cells of the mucous membrane in certain areas, and ulcer results. Some believe that a nutritional factor is concerned in the genesis of gastric and duodenal ulcer. It is possible that allergy may play a role in the etiology of this condition, and that arterio-sclerosis of the gastric and duodenal vessels may be primarily concerned. None of these views have been definitely proven.

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*Presented before Missouri Valley Medical Association, Omaha, October 31, 1928.

We can produce in animals acute lesions of the gastric and duodenal mucosa in many different ways. These lesions in animals heal rapidly and almost without a failure. We can produce acute ulcers of the gastric and duodenal mucosa in man, and they heal rapidly and almost without a failure. This is agreed to by practically every investigator.

The question which primarily concerns us is not so much what is the cause of the acute lesion, but what prevents it from healing, or causes the acute ulcer to become chronic? Acute lesions can be produced in the stomach by mechanical trauma from coarse particles of food: by producing suction with the stomach tube; by blows to the abdomen; and by vomiting and pyloric spasm.

In an animal which has died and in which vomiting was a predominant symptom, one finds hemorrhagic ulcers in a high percentage of cases in the pyloric mucosa. If a spastic contraction of the musculature of the pyloric antrum is caused by vagus stimulation, one frequently finds petechial hemorrhages in the pyloric mucosa. If a large dose of pilocarpine is injected, one frequently finds small hemorrhagic ulcers present. I think the genesis of these hemorrhages is analogous to the cause of blood blisters in the skin. If you compress the skin, a blood blister occurs. When the musculature of the pyloric antrum contracts vigorously, the capillaries of the mucous membrane are broken, a petechial hemorrhage results, and a hemorrhagic erosion will follow in the presence of hydrochloric pepsin.

Acute lesions can be produced by injecting bacterial suspensions in to the arteries leading to the stomach or duodenum. If one takes an animal with a pouch of the pyloric antrum and injects bacteria into its arteries, areas of congestion and edema result. Acute ulcers of the pyloric mucosa may hypothetically result from neuro-atrophic disturbances, analogous to the development of herpes labialis. Some individuals report that on ingesting a full meal, during a period of anxiety or intense nerve strain or stress, that herpes labialis will appear. Hypothetically it may be suggested that similar lesions may appear in the mucous membrane of the stomach. Of course, it is disputed as to whether the cause of herpes labialis is infectious or neuro-trophic in etiology.

If water, at 70° C., is introduced into the stomach of animals every day for a period of a week, autopsy usually reveals acute ulcers of the stomach. I believe irritants and hot fluids may result in the production of gastritis with the occurrence of hemorrhages and hemorrhagic erosions at the point where the contraction of the pyloric musculature is the greatest.

I have, thus, enumerated a number of conditions which may lead to the production of acute ulcers of the stomach and duodenum in man.

There are two known exceptions to the general rule that acute lesions will heal rapidly. One of these exceptions occurs in the rabbit and the other in the dog when in a poor nutritional state.

If in rabbits, according to Ferguson, one excises an area of gastric mucosa one or two centimeters in diameter, feeding the animal a diet of oats, alfalfa hay, carrots and cabbage, the lesion may persist for from two to eight months or longer. It is well known that it is practically impossible to render the stomach of the rabbit empty even by starvation. Its stomach is filled constantly with oat hulls and very rough material, which, I believe, is an important factor in delaying the healing of such lesions in the rabbit's stomach.

I have pointed out in studies published elsewhere that if an acute lesion is produced in the gastric or duodenal mucosa of a dog suffering from some nutritional disturbance, or disturbance of normal digestion that such lesions heal slowly and may present all the characteristics of a chronic ulcer. (Slides were shown). I have also pointed out that when a gastroduodenostomy is performed with clamps that the clamps frequently cause an acute lesion of the duodenal mucosa, and that in dogs which fail for some reason to do well post-operatively this acute lesion is likely to perforate or to become chronic. (Slides). The gastric mucosa is more difficult to injure with clamps than the intestinal mucosa.

Dr. Shapiro and I have attempted to produce chronic gastric ulcers on the principles of Arthus' Phenomenon, or local anaphylaxis. Arthus found that when a foreign protein was injected subcutaneously at five day intervals that following the fifth or sixth injection an indurated ulcer of the skin would result. We sensitized dogs and rabbits to foreign proteins and then injected the foreign protein into the gastric and duodenal mucosa. An acute ulcer resulted, but in both the dogs and rabbits the ulcer healed usually within thirty days, occasionally fifty days being required for complete healing. We attempted to render these acute ulcers chronic by reinjecting the edges of such ulcers made in animals with a pouch of the pyloric antrum. By properly timing our injections we could make a number of ulcers in the mucosa, but we could not cause them to become chronic in normal healthy animals. If allergy is a factor in determining the chronicity of an acute lesion of the gastric or duodenal mucosa, we were unable to demonstrate it. (Slides).

A factor that is important in determining the healing time of an acute ulcer is the fibroblastic reaction at and about the site of the ulcer. Chronic ulcers of the stomach and intestine can be produced with x-rays. It is known that x-rays first cause a delay in fibroblastic proliferation and later there results an over-production of connective tissue which leads to an indurated ulcer that does not heal readily. In the first stage, in which there is little or no fibroblastic reaction, the ulcer would be likely to perforate; in the second stage, in which there is an over production of connective tissue, the ulcer does not heal because the connective tissue decreases the active blood supply, or oxygenation, of the mucosal cells which proliferate and lead to the healing of the ulcer. Dragstedt has shown that when the gastric mucosa of the dogs in an area about one or two centimeters in diameter is woven in and out with a silk suture, an indurated ulcer not infrequently results. In such a case, there is a connective tissue proliferation about the silk and a disturbance of local blood supply results, in addition the mucosa is more fixed to the muscularis than normal and hence is more exposed to mechanical trauma. In my work on gastric secretion, I have had the occasion to perform many operations on the stomach. I always use silk for suture material, and I have yet to observe my first ulcer at the site of a single or double silk suture line. However, if a portion of the mucosa a centimeter or more long becomes umbilicated into the lumen of the stomach, a typically chronic ulcer develops on the umbilicated portion. The factors concerned in the development of this ulcer are (1) connective tissue proliferation, (2) congestion, (3) greater exposure to mechanical trauma, and (4) the digestive action of gastric juices on this mucosa whose resistance is reduced. (Slides).

A mechanical factor is important in determining the healing time of an acute ulcer of the stomach. A number of investigators, including myself, have shown that partial pyloric stenosis delays the healing time of an acute ulcer of the stomach. We have shown recently that in dogs pyloric stenosis *per se* does not cause ulcer. The increased motility, the gastric retention, the disturbance of normal digestion and nutrition do not cause gastric ulcer; but given an acute lesion these factors delay its healing. A number of years ago, I produced acute ulcers by excision of a piece of mucosa from a pouch of the pyloric antrum. These acute ulcers were manipulated with cotton and coarse bread crumbs to the point of bleeding two times daily for ten or fifteen minutes. It was found that the manipulation delayed the healing of the ulcer. Such ulcers were also manipulated with cotton impregnated with virulent bacterial (streptococcus) cultures and 0.4% HCl. The healing time was not prolonged longer than it was by simple manipulation. The acid caused bleeding of the ulcer to occur sooner and such ulcers were not manipulated as long as the other ulcers. These experiments should be repeated keeping the time factor constant and increasing the length of the time of manipulation.

It seems obvious at first thought that the factor of the corrosive action of the gastric juice should be an important and a simple factor in preventing an acute lesion from healing. However, examination of the evidence bearing on this subject questions strongly the possibility of this factor being an important one. There is plenty of acid-pepsin in the stomachs of the normal man and dog, but acute lesions of the stomach and duodenum heal rapidly. When the jejunal or ileal mucosa is "transplanted" into the wall of the stomach and exposed thereby to the acid of the gastric contents ulcers are not formed, if the blood supply of the transplant is not interferred with. I have made such "transplants" into the wall of the pyloric antrum about one-half to one inch from the sphincter without the development of an ulcer in the mucosa of the "transplant" as long as one year after the transplant was made. Mann and de Takats observed ulcers to occur in some jejunal "transplants" that were placed along the lesser curvature of the stomach. However, one cannot feel certain that the normal blood supply was not disturbed with the transplants in such an anatomical position. Dragstedt and Vaughn have decapsulated a portion of the spleen and kidney and have fixed such an area to the edges of an opening in the stomach, so that the splenic and kidney parenchyma was exposed to the gastric content. The spleen and kidney parenchyma showed no evidence of being digested. Living skin, muscle, bone and connective tissue with a normal blood supply are digested by gastric juice, but intestinal mucosa, spleenic and kidney parenchyma with a normal blood supply are able to resist the corrosive action of gastric juice.

Mann and his colleagues have produced a high percentage of jejunal ulcers following gastrojejunostomy in dogs by performing the following operation: (1) A pylorectomy is performed and the duodenum is closed; (2) the jejunum is cut across and the distal end is connected to the stomach by an end-to-end anastomosis, and (3) the proximal end of the jejunum is anastomosed to the lower portion of the ileum. This type of an operation diverts the bile and pancreatic juice into the lower ileum and leaves the acid chyme from the stomach to be neutralized solely by the succus entericus produced by the jejunum. The high percentage of ulcers that occur in the jejunum near the gastro-jejunostomy strongly suggests that the acid chyme is responsible for the development of the ulcers. We have recently confirmed these observations. However, we have performed the following operation in over forty dogs with only a five per cent incidence of ulcers: (1) A pylorectomy was performed and the duodenum is closed; (2) a gastro-duodenostomy, end of the stomach to the side of the duodenum (Polya type of operation), is done; (3) the animals are allowed to continue for several weeks or months in some cases and then (4) the duodenum is cut across below the bile duct and pancreatic ducts and proximal to the gastro-duodenostomy, the distal end being closed and the proximal end is anastomosed to the lower ileum.

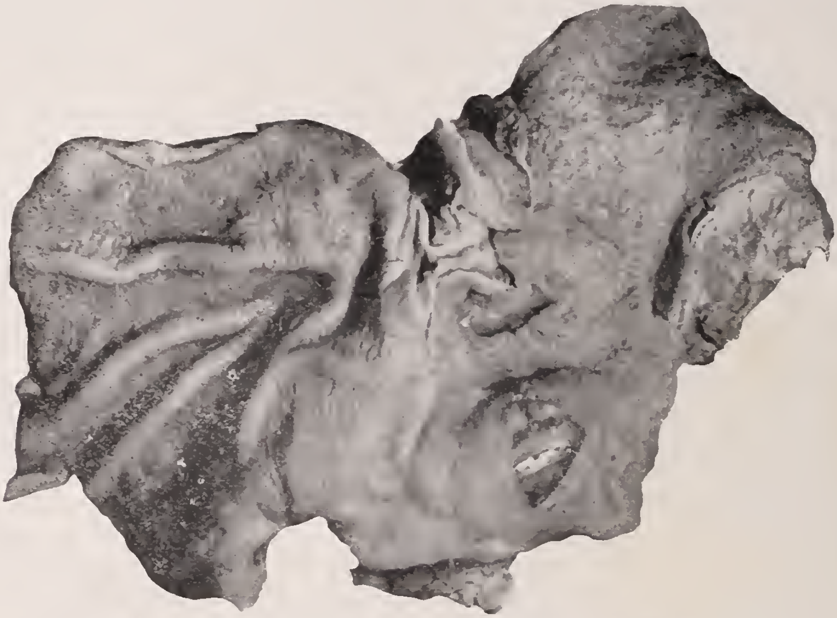

Figure 1. A picture of the type of "contact" or "kissing" ulcers that occasionally develop after ligation of the common bile duct or the pancreatic ducts.

In this type of operation, the bile and pancreatic juice is diverted from the upper intestine but only a small percentage of ulcers result. How is this difference to be explained? In both cases, there is a disturbance of normal digestion, which cannot be the prime factor. Does this result mean that the jejunal mucosa is more sensitive to acid chyme than the duodenal mucosa? Such a difference is not indicated from the results of "transplanting" the jejunum into the stomach. In my experience in experiments on gastric secretion in which I applied 0.4% HCl to the intestinal mucosa, I found no marked difference in the capacity of the mucosa to neutralize acid, but I did note that bleeding occurred more readily from the jejunal mucosa than the duodenal as the result of such a procedure. The type of gastro-enterostomy differed in these two series of

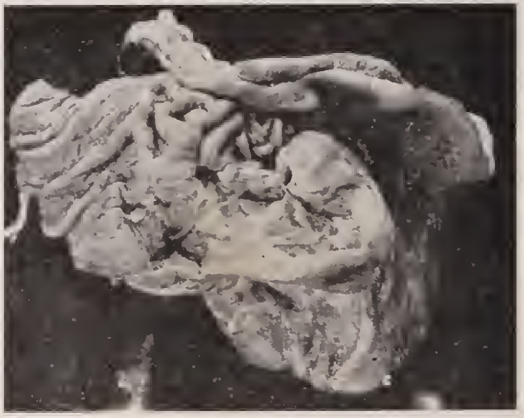

Figure 2. A picture of the type of ulcer that occurs along a non-absorbable suture line when a considerable portion of the mucosa has been turned in towards the lumen.

experiments. In the work of Mann and his colleagues an end-to-end anastomosis was made; in our series an end-to-side anastomosis was made the ostomy being 1½ to 2 inches in size. This, I believe, is an important factor because in the former case the motor drive, on the ejection of chyme under pressure, of the stomach is maintained, whereas in the type of anastomosis we used the motor drive was decreased and the stomach probably emptied faster.

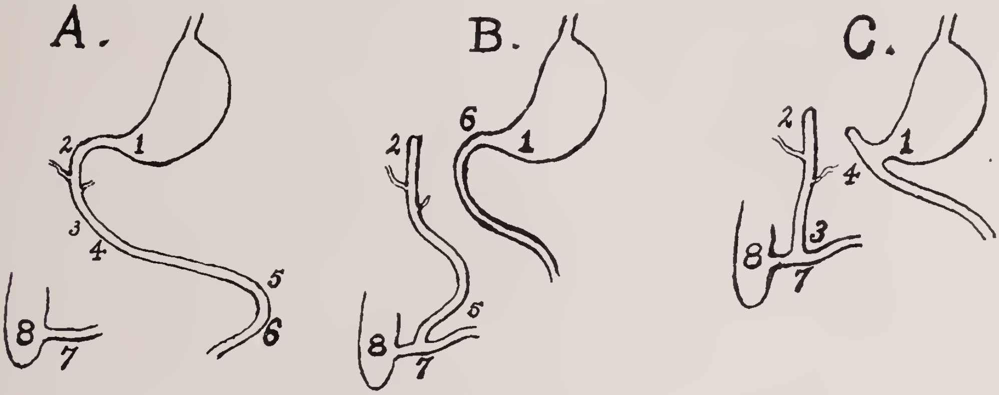

Figure 3. Diagrams to show the different types of gastro-enterostomy performed. "A" is the key to diagrams "B" and "C". "1" is the plyoric antrum, "2" the beginning of the duodenum, "3" and "4" the site of the "Polya" end-to-end gastro-duodenostomy, "5" and "6" the site of the "Bilroth" end-to-end gastro-jejunostomy. "7" is the last few inches of the ileum, and "8" is the caecum. "B" is the type of operation in which a large percentage (80-90%) of ulcers develop in the jejunum at "6". "C" is the type of operation in which only a small percentage (5%) of ulcers develop in the duodenum at "4".

I have occasionally observed duodenal ulcers to occur following ligation of the pancreatic ducts and the common bile duct. These ulcers have commonly occurred double in my experience, the so-called "kissing type", and have occurred at the point where the duodenum is grasped with the fingers for the purpose of exposing it for the dissection and ligation of the ducts. Presumably the fingers caused the acute lesions which did not heal. In such animals there occurs a disturbance of normal digestion in addition to the absence of the neutralizing action of the bile and pancreatic which in the case of bile is not very significant. (Slides of such ulcers were shown).

Balfour, in reviewing 270 cases of gastro-jejunal ulcers in man, states that in one-fifth of these cases no free HCl was found on repeated examinations. Free acid might have been present if the examination had been made four or five hours after a regular meal. However, this is fairly good evidence that achlorhydria does not prevent the development of jejunal ulcers after gastro-jejunostomy. At this point I should like to again mention that surgeons should exercise much care in the use of clamps, instruments and fingers when handling the intestine.

When one considers the foregoing facts and possibilities, it is evident that one cannot state definitely that the lack of neutralization of the acid-chyme is of prime importance in the genesis of gastro-jejunal ulcer. I am willing to grant that it is possible that acid is a factor in the genesis of chronic ulcer but the evidence at hand does not show that it is a prime factor. Evidence is at hand which in my opinion shows that the mechanical factor is of prime importance in determining chronicity. My experimental data also shows that the nutritional (a disturbance of normal digestion) factor plays a role in the chronicity of ulcer.

A STUDY OF THE PRINCIPLES OF MEDICAL DIAGNOSIS*

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There is no poverty of treatises on medical diagnosis, and let me say at the outset that I have no desire to swell the already effete condition of our literature by repeating the usual trite admonitions, salutary though they be. We propose merely a criticism of our methods of attack upon diagnostic problems and an inquiry as to the factors causing error, as well as a search for general principles, if such there be.

Diagnosis is not only the most difficult part of medicine. It is also the most important, for prognosis and rational treatment are based upon it. It is beside the point to say—which is true—

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that a considerable percentage of ailments are cured either with no diagnosis or a wrong one. For it is just in those conditions where an accurate determination of the cause is necessary that the physician proves his superiority over the medicine man. We may often be worried over the proper method of treatment, but it is as nothing to the feeling of helplessness when even the cause of the patient's symptoms is unknown.

Perhaps as consoluation we should reflect that it is not so much a wonder that we fail so often, but that we are so often correct. A survey of our elaborate systems of medicine would lead one to think that all diseases had been properly classified, and that nothing remained but to file each case in its proper pigeon holes. A survey of hospital wards and of pathological specimens, however, shows us that Nature is not so easily comprehended, and that many lacunae still exist in our knowledge. Even yet there may be two or three different diseases where we suppose one to exist.

Then, too, one pathological condition may manifest itself under a multitude of diagnosis. Syphilis is the classical example in this field, but it is by no means the only one. Consider even the variation in symptomatology, pathology, and complications in such a relatively simple disease as acute appendicitis.

This is so true that an eminent German clinician once said, "Es giebt keine Krankeiten, es giebt nur Kranke." By this he meant that in spite of classifications of disease there is an individuality about every case—no two are exactly alike—and that is the experience of all of us. The picture outlined so vividly in our medical treatises is, in reality, a composite photograph of many single ones, each with its own variations and peculiarities.

On the other hand, if there were not some uniformity in symptoms and signs, diagnosis would be impossible. The only reason for the possibility of success lies in the fact that disease is a rational phenomenon and obeys certain laws; is laid out upon an apparently rational scheme like the rest of nature. Or, stated otherwise, that the physiology of the human body is fairly constant and that it reacts similarly to similar defects and disturbances.

There is enough variability, however, in physiologic reactions due to age, sex, race, obscure idiosyncrasies, etc., as well as rather wide ranges of variability in such factors as virulence of infecting agent, extent of tissue damage, etc., to result in an extremely variegated picture.

In attacking a diagnostic problem, two means are employed in eliciting the facts—the one, a study of the patient's symptoms; the other, a study of such objective findings as may be elicited by various types of examination.

The former is the usual and rational starting point. Enough has been said in late years in medical meetings about the importance of a careful history. It is just as well to keep in mind, however, that a good history does not consist in taking down everything the patient says; that the history is not necessarily valuable because it is prolix and gossipy, so to speak, nor worthless because it is brief. The purpose of this part of diagnostic method should be constantly kept in mind—that is, that when we obtain a history we are making an attempt to elicit from the patient's own story of his symptoms some clue as to the location and character of his disease. The worth of the history in diagnosis depends on just how much information of a leading or decisive character it gives us.

Thus the history may have much more value in some cases than in others. Indeed, it may be worthless; or it may contain the only important facts obtainable. Whether a history of any consequence is possible depends also on the intelligence and reliability of the patient. Some are too sick, some too stupid, and some wilfully try to mislead the physician.

One is often struck by the way disease of one part of the body may spread its symptoms over the whole sensorium, so that hardly any localizing symptoms may be present. The history, however, often reveals a *point du depart,* a necessary and irreplaceable clue to a mystery which otherwise would scarcely be possible of solution. An excellent example is given by Foster in his manual, "The Examination of Patients":

> "A young man was brought to the New York hospital in coma. There was fever up to 103°. No evidence of any injury. It was noted that the neck was stiff and all muscle groups hypertonic; the reflexes were present and there was no paralysis. There was no evidence of otitis media. Examination of the heart and lungs disclosed nothing abnormal. The spleen was slightly enlarged. Purulent urethritis was present, due to the gonococcus, it was determined. The special examination of the blood and urine yielded no significant fact. Thus far the facts indicated some infection of the nervous system. Especially considered were gonococcus septicemia, with meningitis, tuberculous meningitis, typhoid with meningitis, and some form of poisoning.
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> "Blood cultures were made, a lumbar puncture performed, and the fluid examined; radiograms of the skull to exclude fracture, the stomach and bowel lavaged and chemical tests of the blood started. On the evening of the day of admission of the patient, his pal came to the hospital seeking his friend. From

him we learned that they belonged to a tramp merchantman, and the last port of call had been in Central America; also that the patient had had chills on the voyage north. A diligent search of blood slides disclosed an occasional malarial crescent, and vigorous quinine therapy cured the patient."

Another example from our own files:

A middle-aged man had consulted several physicians in regard to a hematuria. Tentative diagnosis was renal stone, and as his work involved frequent automobile trips, he bought a larger car thinking that the jolting might have brought on these occasional attacks. After one such seizure, he was examined by a competent urologist and radiologist with negative results. My first inquiry on seeing him was to ask him to describe his first attack fully. He stated that it came on after being severely chilled one fall night when, on one of his trips to look at farm land, he had been stranded in an out-of-the-way place and compelled to sleep in a deserted building with insufficient covering. In the morning he had a chill and passed bloody urine.

Further investigation disclosed that each attack was brought about by chilling of the body surface, and a diagnosis of paroxysmal hemoglobinuria was made. The urine of a subsequent seizure was typical of this condition.

There is no need to multiply examples. All of us from time to time have been able to make the diagnosis from the history alone.

Now for the other side of the picture. A perfectly satisfactory history from an intelligent patient, given with the best good will in the world, may not only give us no information, but even lead us astray.

A woman of sixty with good bodily nutrition came to the hospital complaining of pain radiating from the left loin downwards. Hematuria had occurred at times in the past eight or ten years. In every way the anamnesis fitted the usual one of renal stone. Physical examination showed an enlarged axillary lymph node and a scar on the back. This latter, the patient then said, was due to a small black tumor which had started to grow three years ago and had been removed then. She refused a biopsy of the node, and any renal examination was deferred. Two or three days later she coughed up a little bloody sputum. The radiograph showed the lungs riddled with metastases, and she died six weeks later from generalized melanosarcoma.

It is evident that the history has a very variable value. Theoretically, the patient's symptoms are our most delicate index of disease. Mackenzie and other eminent modern clinicians have pointed out that the sensorium is a more delicate instrument than any that we yet possess. The difficulty, however, lies in the interpretation. Which symptoms are significant and which not? Portions of the body far distant and seemingly unrelated to the pathologic process may be the seats of pain. We no longer believe that all epigastric pain is due to disease of the stomach or gallbladder; that right iliac pain is always a sign of appendicitis, or sacral pain a symptom of retroverted uterus.

An accurate physician should soon drop these naive notions. Study of the sympathetic nervous system and of the physiology of pain reference has cleared up some of these puzzles. Yet even with all our care in analysis, symptom-complexes often come to our notice where it seems as if Nature had deliberately set a trap to ensnare us.

The same criticism may be made relative to the data of physical examination. No one doubts the importance of careful scrutiny of the patient's body by all the means at our command. Yet in certain diseases physical examination gives but indifferent information. For instance, in some of the severest types of heart disease, the symptomatology is of far more importance.

Then there is the ever-present danger of finding signs which are not there. One is reminded of the story of a famous clinic where one professor showed a patient with tuberculosis of the right apex in the morning, and another professor showed the same patient with tuberculosis in the left apex in the afternoon.

It is also an easy pitfall for the consultant to pride himself on an especially fine ear, or a *tactus eruditissimus,* so to speak, and thus catch faint cardiac murmurs and outline vague abdominal tumors which none of his confreres can find.

One must maintain a judicial attitude even with reference to the data rendered by his own senses. I have seen Argyll-Robertson pupils, Bobinski reactions, ankle-clonus, etc., recorded on the chart, when, in fact, no such abnormalities existed. A not uncommon error on the point of the examiner is never to admit that the organ examined is normal. This is comparable to the attitude of the pathologist who describes all surgically removed appendices as chronically inflammed, all ovaries as cystic or sclerotic, all uteri as having hypertrophic mucosae or fibrosis of their walls.

What we call normality is not a straight line, but a somewhat variable grouping about an average. It is a nice question as to just what should be called abnormal? No more difficult one confronts us. Between the Scylla of neglecting the faint ,early signs of disease, and the Charybdis of being led astray by irrelevant fluctuations in bodily architecture and function, lies our course, one which is at times exceedingly difficult to steer.

The use of various laboratory procedures in the examination of the patient is general today, and has led to much greater accuracy in diagnosis. Any refinement in diagnostic procedure is to be welcomed. We should beware, however, that those are not accepted as a substitute for thinking. There may come a time when it will be possible to practice scientific medicine without brains, but that golden era has not yet arrived. I am reminded of a prediction some years ago relative to the now discredited Abderhalden's test. It was stated that soon it would be possible to secure serum from the patient, and by layering it over various substrata of the organs of the body, determine which one was diseased.

To the contrary, haphazard tests are about as likely to lead to correct diagnosis as the firing of a shot gun up into the air with one's eyes closed is to bring down a bird. And unless the physician is willing to saddle his patients with futile yet expensive procedures, he should have some rational expectation in his mind that efforts of this sort may lead to something. It is almost true that the acumen of a clinician is in inverse proportion to the number of laboratory tests which he orders. Do not forget, either, that there are times when such tests may lead us astray instead of giving aid. Many a physician has had a test-tube finding change his previous sounder judgment, only to find later that he was originally correct.

A man of fifty-five had a severe attack of epigastric pain. Coronary occlusion was diagnosed mainly because the pain followed a public address which he had given. At autopsy, the diagnosis was corroborated. A large infarct of the left ventricle was found, and also a gallbladder filled with stones. Perhaps it was a fortunate thing for me that I did not have a dye test done.

What does any test mean, anyway? Only just so much and no more. A positive Widal simply means that the patient has agglutinins in his blood for the *Bacillus typhosus*. It does not discriminate between a previous attack of typhoid or previous prophylactic vaccination.

An x-ray shadow is just a shadow, and valuable as is the information which this branch of medicine will often give us, there are many cases where no amount of fine-spun differentiation will help a physician who expects too much aid from it.

How many pathognomonic laboratory procedures do we have? Recovery of a pathogenic bacterium from the blood? Yes, if one can be sure it is not a contaminant, and if it does not represent merely an antemortem invasion. Positive culture for *Bacillus diphtheriae?* But the patient may be a carrier. Positive Wassermann reaction? But I have seen epithelioma incorrectly diagnosed on this account.

The blood picture of leukemia? Yet two recent cases reported with the typical blood findings of this disease proved to be generalized miliary tuberculosis at autopsy. And so on.

After all the data have been assembled, the symptomatology and the objective findings given by the physician's unaided senses and various laboratory procedures, comes the far more difficult problem of putting these together. This is not analogous to the solution of an algebraic equation where the various variables represent the diagnostic data, leaving the diagnosis, X, to be filled in. On the contrary, diagnosis is far from such a mechanical process. There must be selective, synthetic, adjudicative ratiocination in nearly all problems which offer any difficulty.

William T. Vaughn, in a brilliant essay some years ago, likened the diagnostic art to that of the detective. The simile is very apt. A crime has been committed. The criminal has been astute enough to leave as few clues as possible. He may have purposely arranged to have suspicion fall on some one else and have contrived a seemingly perfect alibi. Now the detective in charge can have his underlings take photographs of the scene of the crime, make measurements, examine finger prints, and shadow suspects; but it is the final putting together of the picture puzzle which is the difficult part of the work.

Robert Hutchison writes in a recent number of the *British Medical Journal*:

> "Errors in diagnosis may arise from bad observation, from ignorance, or from want of judgment. It is commonly said that more mistakes are made by not looking (defective observation) than by not knowing (ignorance). However this may be, I believe that still more mistakes arise from bad weighing of evidence (lack of judgment). You may increase the accuracy of your observations in a case and the range of knowledge brought to bear on it by the most skilled teamwork, but without a good judge of evidence as captain of the team, these things will avail nothing in diagnosis.
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> "I came across, not long ago, a good example of the prevalent undervaluation of judgment and the overvaluation of observation as factors in making a diagnosis. A practitioner wrote to a medical journal to say that he had no use for the consultant whose only instrument was the stethoscope! This, being interpreted, means that that particular doctor is of opinion that he never needs any help in weighing the evidence in a case; all he wants is help in detecting more signs by instrumental and laboratory methods. I take leave to doubt, however ,whether such self-confidence is ever justified. Cases must arise often enough in every practice in which what is wanted to establish a diagnosis is not more facts, but a new evaluation of existing facts by a fresh mind—in other words, a revised judgment."

Now let us assume that the most careful study has been made of a large group of patients. The histories are complete; the physical findings checked and rechecked, and all necessary laboratory procedures performed. Finally, the most acute and experienced practitioners pass on these findings. Will there be any errors? Of course, we all know there will. The percentage of errors is large even in the best hospitals. And I want to insist that this cannot always be laid to either carelessness or lack of experience.

We know that the differentiation between some diseases and the diagnosis of others cannot be made before autopsy, and that even then this must wait until extensive microscopic or bacteriologic studies have been made. If a disseminated cancer of the lung can so closely simulate tuberculosis as to be only surely differentiated by microscopic sections, as in one case I have seen and one reported by H. G. Wells, why blame the clinician who works under a far greater handicap?

Medicine is a growing science. In comparison to the complexity of its domain, our methods even yet are crude. This is more true in certain types of disease than of others. The diagnosis of diabetes, diphtheria, typhoid fever, meningitis, etc., are usually accurate; but abdominal tumors, liver disease, splenomegalies, endocrine dyscrasies, etc., are notoriously fields for speculative diagnosis, and the percentage of error is high.

If we become disheartened at times we should remember how great an advance our art has made in the last half century. There is no reason to believe that following generations will not look at our mistakes as we do at those of Hippocrates and Galen.

Then, too, in the very nature of things, and subject to the laws of chance, there must occur now and then pathologic conglomerations which defy every attempt at clinical solution. Multiple lesions in the same individual are uncommon, but occur often enough to keep us humble. And diagnosis here would run counter to one of the chief principles of medical logic. For it is recognized as dangerous to diagnose two diseases in the same patient.

But suppose that a patient from whom a carcinoma of the breast was removed a year before develops an endothelioma of the spinal dura; or a patient with an old rheumatic endocarditis develops a silent perinephric abscess; or a patient who ran a dirty nail into his foot, ten days later takes a lethal dose of strychnine. Combination of circumstances can occur which might fool the very elect.

A man was admitted to the hospital with a history of syphilis some twenty years before, and presumably inadequate treatment. Right hemiplegia and aphasia had come on a few days before admission. There was no history of vomiting, headache, or other symptoms. Retinal examination was negative, as was also blood and spinal fluid serology. A diagnosis of cerebral thrombosis was made, the result of a syphilitic endarteritis. At autopsy, a glioma of the left hemisphere was found.

A woman with jaundice and ascites stated that the former had been painless in onset. Stools were clay colored. Liver was large, indefinitely felt, and further attempts at palpation told no more, for the abdominal fluid could not be evacuated by paracentesis to a sufficient extent. Abdominal carcinoma seemed most probable, but at autopsy a hypertrophic portal cirrhosis was found. The gallbladder and its ducts were distended, but no organic obstruction could be found.

A young man of thirty-five with daily fever of 101° to 102° and general abdominal pain of three weeks' duration, moderate tenderness and doughy feel of the abdomen, showed a gradually increasing ascites, and a diagnosis of tuberculous peritonitis was made. Autopsy showed no sign of tuberculosis, but instead a chronic peritonitis of unknown origin.

I believe that in strict honesty we must admit that as far as academic accuracy goes, a considerable percentage of diagnoses are either not made, or are wrong; also that a large proportion of these are not due to any fault on the part of the physician, but are due partly to the inadequate development of medicine, and partly to the tricks of Nature. There is, it may be remarked, just one physician whose diagnoses are always correct. That is the one who never has any autopsies performed.

Fortunately, most diagnoses are prognostically correct. It is seldom that under good hands a patient dies because of a mistaken diagnosis, though often enough, needless surgery is undertaken on this account. In some conditions, it matters little, as far as the patient's life and health are concerned, what the diagnosis may be. This is a poor refuge, however; for, in the first place, with increasing efficiency in therapeutics, the necessitv for correct diagnosis is correspondingly increased ;and secondly, he who condemns accuracy in the more obscure conditions, may, by the very habit of careless observation and mental laziness, fail in recognizing remediable disease.

In conclusion, we feel certain that there is no one line of attack to follow in diagnosis. It is far too complicated to admit yet of being reduced to standardized procedure. The securing of the necessary data may be, and generally is, reduced to a method; but the interpretation of these is the crux of the matter, and it will depend as much on the judgment of the physician as upon his learning.

FUSO-SPIROCHETAL INFECTIONS OF THE LUNG*

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Until recently the spirochete has been given scant attention as a possible factor in pulmonary disease. It is a matter of historical interest to note such organisms were demonstrated in the sputum of patients suffering from putrid bronchitis as early as 1867 although no significance was attached to the finding. In 1906 Castellani⁽¹⁾ described a group of cases observed in Ceylon in which he considered the spirochete as the etiologic agent in the pulmonary disease. These patients presented a clinical picture resembling tuberculosis. The radiographic findings were not characteristic of such an infection and no tubercle bacilli could be demonstrated in the sputum. The clinical symptoms were weakness, fever, and cough with scanty bloody expectoration. Examination of the sputum revealed many spirochetes which Castellani described as a specific type, spirochete bronchialis. No mention was made of the presence of fusiform bacilli.

Until 1918 spirochetal infection of the lung was generally considered a tropical disease of which only a few cases had been described. Sporadic cases were, however, being reported from other parts of the world. The first cases on record in the United States are those reported by Johnson⁽²⁾ from Mississippi in 1909. Rothwell⁽³⁾ described two cases from Missouri in 1910. These patients presented clinical symptoms similar to those described by Castellani and were designated bronchial Vincent's angina, since the sputum showed many spirochetes and fusiform bacilli.

That relatively little attention has been given fuso-spirochetal lung infections is best evidenced by the fact that only 107 cases of all types had been reported in this country up on 1927. Increased interest in the subject is due largely to the splendid work of Pilot and Davis⁽⁴⁾ on the role of this group of organisms in suppurative lesions of the lung, and of Fisberg and Kline⁽⁵⁾ and Kline and Blankenhorn⁽⁶⁾ on spirochetal pulmonary gangrene. More recently Smith⁽⁷⁾ has studied a large group including all types of pulmonary disease due to the spirochetes.

The spirochetes and fusiform bacilli are easy to demonstrate if properly searched for. In a routine examination for tubercle bacilli or with the gram stain they are not seen. The sputum must be washed through successive changes of physiologic salt to eliminate mouth contaminations. A very thin smear is made on a slide, covered with Sterling's gentian violet, washed off immediately under the tap, dried and examined. Carbol-fuchsion may be used, but the gentian violet stain is far preferable. Smith⁽⁶⁾ could find no spirochetes or fusiform bacilli in the sputum of 150 control cases of uncomplicated pulmonary tuberculosis, 6 cases of bronchial asthma, and 5 cases of mycotic lung infection.

We now recognize and differentiate four types of lung infection in which the Vincent's group of organisms is one if not the sole etiologic factor.

Group I. *Acute, Subacute, and Chronic Bronchitis.* Acute and subacute bronchitis may be due to a wide variety of organisms. The infection is usually self limited but may pass over into a chronic type. The frequency with which such acute infections are due to fuso-spirochetes cannot be estimated since few are studied bacteriologically. In an epidemic of 129 cases of Vincent's infection studied in England during the World War, seven developed only a bronchitis, the sputum showing abundant spirochetes and fusiform bacilli. Putrid bronchitis is not recognized as always due to this group of organisms.

Probably cases of acute bronchitis due to fuso-spirochetes occur often in clinical practice. The organisms are constant inhabitants of the mouth. Smears taken from pockets around the gums always show spirochetes and fusiform bacilli. Tonsil plugs are made up largely of masses of such organisms. Some factor other than the actual presence of the organism is usually necessary for the production of any infection. This is probably some lowering of the normal resistance of the host.

The cases of spirochetal bronchitis which are recognized are those in which the acute stage is followed by a chronic infection which does not yield to the usual therapeutic measures. With such a spirochetal bronchitis, there is usually fever and cough with more or less expectoration. The radiograph shows little, and physical examination only scattered moist rales. Tuberculosis is suspected, but not verified by physical, x-ray or sputum examinations. The following are typical examples:

Case 1. A woman, age 60, in April, had an attack of bronchitis. She had been seen at times over a period of several years without showing any symptoms or signs of pulmonary disease. There was no reason to think the bronchitis was other than the type commonly seen. She improved under treatment but several months later was still having a temperature as high as 100 each day with a cough. The radiograph showed only the markings characteristic of chronic bronchitis. The physical examination revealed little. The sputum showed many spirochetes and fusiform bacilli and no tubercle bacilli. Six doses of neosalvarsan were given with complete relief of fever and other symptoms. There has been no recurrence.

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*Read before the Missouri Valley Medical Association meeting, Omaha, October 30, 1928.

Case 2. A barber, age 43, for a long time had been inducing vomiting to relieve a morning nausea. Three weeks before admission to the hospital he had begun to have chills, fever, cough and expectoration. The fever continued as high as 102. There was no hemoptysis. The white blood count showed 7,900 with a normal differential. The sputum was negative for tubercle bacilli. The urine showed only a trace of albumen. An x-ray of the chest showed a "mild interstitial fibrosis." The Widal test was negative.

When seen ten days after admission the temperature was 102. The only positive findings were a few moist rales and possibly a slight friction rub over the right lower lobe. The cough was severe. The abundant sputum showed many spirochetes and fusiform bacilli. Neosalvarsan was given with immediate return of the temperature to normal and complete recovery.

Group II. *Bronchiectasis.* A number of factors are probably operative in the development of a bronchiectasis. The dilation of the bronchi is probably one of the most important in the continuation of the symptoms. Often the organisms of the Vincent's group play a role in the causation of the symptoms especially of the periodic exacerbations with increased cough, expectoration and fever. The fuso-spirochetes are always a factor if there is an associated putrid bronchitis. The following cases illustrate this group.

Case 3. A man, age 65, had had a chronic cough since an attack of measles in childhood. From time to time he had attacks of fever during which the cough and expectoration became more severe. The patient was first seen soon after one of these attacks. There were the physical signs of a generalized bronchitis and a small area of consolidation in the right lower lobe. The x-ray showed the markings characteristic of bronchiestasis. The patient was much undernourished, the chest was barrel shaped, and the lungs were emphysematous. Oral sepsis was most marked. The sputum was abundant with the characteristic sweetish odor and showed many spirochetes and fusiform bacilli. The patient was given several doses of neosalvarsan with immediate subsidence of the fever. Several months later another attack developed and terminated in death.

Case 4. A woman, age 65, came in for treatment for a typical atrophic arthritis. For many years she had had a chronic cough with abundant sputum. The respiratory infection she dated from an attack of measles in young adult life. The joint condition had been active for 2 years and was very severe. From time to time she had had exacerbations of the lung infection with fever, and increased cough and expectoration.

The physical examination of the chest showed only the signs of a bronchitis. The x-ray was characteristic of bronchiectasis. The lung infection was markedly improved under neosalvarsan therapy and has been kept under control for three years by courses of treatment at intervals of several months. With the control of her lung infection the arthritis has improved markedly.

Group III. *Abscess of the Lung.* A lung abscess may result from a number of widely different causes. The most common cause is aspiration of micro-organisms with or without foreign material. We now recognize that spirochetes and fusiform bacilli play a most important role in the necrosis of tissue characteristic of aspiration lung abscesses. The following cases are examples of this type:

Case 5. A young man, age 27, four hours after a tonsillectomy, had a chill followed by a cough and pain in the chest. Later there were the typical signs of an abscess in the right middle lobe. Fever, expectoration and hemoptysis continued for several months. A sputum examination after the lung abscess was far advanced showed spirochetes and fusiform bacilli as the predominant organisms and present in large numbers. The sputum was foul smelling. The patient improved under neosalvarsan treatment. There was no further extension of the abscess. This patient was lost sight of after discharge from the hospital. The abscess cavity was so large surgical interference would probably be necessary.

Case 6. A man, age 28, developed a sudden pain under the left costal margin. Several days previous to the onset he had fallen while carrying a very heavy machine. The pain continued without evident explanation until he developed a cough, fever, expectoration, and the physical and x-ray findings of an abscess in the left lower lobe. An examination of the fetid sputum showed many spirochetes and fusiform bacilli. The patient improved under treatment. The abscess did not extend and became walled off. The patient was discharged from the hospital. While in another state he developed a second abscess in the same lung, with a marked toxemia and died. An autopsy showed the primary infection to be in the base of the left lung near the diaphragm. A small fistulous tract led from this area to the original abscess.

Group IV. *Gangrene of the Lung.* Probably all cases of gangrene of the lung are due to Vincent's fuso-spirochetes. The following cases may be cited as illustrations:

Case 7. A colored man, age 24, four weeks before admission to the hospital, was struck on the head and rendered unconscious for a short time. Three days after this accident he developed pain in the chest, fever, and a cough with abundant, foul-smelling sputum. On admission, the physical examination showed only dullness and rales at the right base and a marked dental sepsis. The x-ray revealed an area of consolidation, cone shaped with the base to the hilus, in the right lower lobe. The cough and fever continued and the sputum became more abundant. The consolidation as shown by physical examination and the x-ray extended and numerous cavities developed. The patient had a terminal hemorrhage. Only the day before death were spirochetes and bacilli looked for. These were present in large numbers. An autopsy confirmed the diagnosis of spirochetal pulmonary gangrene.

Case 8. A boiler maker, age 37, was admitted to the hospital in September. He dated the onset of his illness from an acute respiratory infection in February. At that time he had been confined to bed for one month with chills, fever, cough, and pain in the right chest. He was unable to return to work although the symptoms improved. He had again been confined to bed since June. The sputum was abundant and foul smelling .He had lost 50 pounds in weight and continued to have fever and sweats.

The examination on admission to the hospital revealed a marked anemia, extreme oral sepsis, and dullness and rales over the right lower chest. The x-ray showed consolidation in this area. The sputum examination showed many spirochetes and fusiform bacilli. The patient made a complete recovery under neosalvarsan therapy.

DISCUSSION

Fuso-spirochetal infections of the lung are common. They are often unrecognized early if recognized at all. This is most unfortunate for the patient, since treatment is satisfactory if begun early. The organisms are present in large numbers around the teeth and in the tonsils. At times the organisms may become very virulent and initiate primarily a pulmonary infection. Epidemics of Vincent's angina, due to an increased virulence of the organisms were not uncommonly observed in the camps during the World war.

Usually there are predisposing factors other than presence of the organisms. The individuals affected are often below par physically. The various types of chronic bronchitis are commonly associated with a bronchiectasis. The course of the infection is much influenced by these contributory factors as well as by the extent of the lesion.

In the infections characterized by destruction of tissue and foul expectoration, as abscesses, and gangrene, often there is some circumstance causing aspiration of material from the oral cavity. In other cases the suppurative process seems to be simply a continuation of an acute infection which may or may not be due primarily to the fuso-spirochetes.

Streptococci are usually found with the spirochetes and fusiform bacilli. There seems little doubt that the spirochete is the organism responsible for the death of tissue as it can be demonstrated alone in the zone of advance of necrosis in the involved tissue. In gangrene which represents the most virulent type of the disease, spirochetes can be demonstrated in enormous numbers.

The treatment is satisfactory if instituted early. Neosalvarsan can only kill spirochetes, however. It cannot replace dead lung tissue. Too often treatment is begun late after much tissue is destroyed. The fuso-spirochetes should be searched for early in atypical cases of bronchitis, in bronchiectasis, and all destructive lung lesions with foul expectoration. Neosalvarsan is often of the greatest valve in holding the symptoms in check and especially in preventing exacerbations in which there is an extension of the disease process from the bronchi to the parenchyma of the lung.

SUMMARY

The fuso-spirochetes are constant and normal inhabitants of the oral cavity.

These organisms may cause pulmonary disease due to a great increase in virulence, or to accidental aspiration, or in conjunction with a decrease in local or general resistance of the individual.

Four types of disease may result from such an infection: (1) Bronchitis of different types, (2) bronchiectasis, (3) pulmonary abscess, and (4) pulmonary gangrene.

The characteristic pulmonary lesion is a bronchopneumonia with death of tissue, and cavity formation.

The spirochete is probably the active etiologic factor.

If recognized early, treatment with neosalvarsan is quite satisfactory.

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OUR OWN BODIES

"You know the model of your car;
You know just what its powers are.
You treat it with a deal of care
Nor tax it more than it can bear.
But as to self—that's different;
Your mechanism may be bent,
Your carburetor gone to grass,
Your engine just a rusty mass.

Your wheels may wobble, and your cogs
Be hauled over to the dogs.
And you skip and skid and slide
Without a thought of things inside.
What fools, indeed, we mortals are
To lavish care upon a car
With ne'er a bit of time to see
About our own machinery!"

—John Kendrick Bangs.

ROUND CELL INFILTRATIONS IN POLIOMYELITIS AND ENCEPHALITIS*

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This is a piece of research I recently undertook with Dr. Globus, eminent neurologist of Mt. Sinai Hospital, New York City. Selection of material, writing of clinical data in respect to history, diagnosis, parallel findings, etc., was attended to by Dr. Globus. My work consisted in an investigation of the vascular lesions of the central nervous systems from a view point of modern hematology, a field in which I happen to have European training.

In the past few years there has been considerable discussion as to the origin of exudate cells which appear in inflammatory reactions. Despite the variety of new methods employed as intra vitam staining, injection of colloidal dyes and India ink suspensions, growth of various tissues in vitro, we are not further advanced today than in the time of Cohnheim and Virchow when it comes to sameness of opinion as to the genesis of these cells. Back in 1867, Cohnheim was the first to state that white corpuscles leave the blood stream and are responsible for the exudates that appear in inflammatory conditions and chronic lesions. Virchow regarded the cells as of local origin, formed from fixed connective tissue elements around the blood vessels. Views advocating either a hematogenous or histogenous origin of the exudates have been recorded in the literature ever since. Thus Baumgarten, Metchnikoff, Schridde and others holding an exclusive hemic or blood origin; Ribbert, Dominici, Marchand, Herzog, Ferrata, Pappenheim and others maintaining an exclusive histogenous origin. A middle position, proposing a mixed origin is taken by Maximow, the well known Russian histologist whose services America was fortunate to obtain. He is now at the Chicago University.**

Pioneer in this problem of inflammatory reactions, Maximow for twenty-five years has persistently held the same opinion in his experimental and pathological investigations, and his recent splendid tissue culture work. His theory regarding the origin of the exudate cells that appear under inflammatory conditions is a mixed one. The cells are derived (a) partly from preexisting round wandering cells (emigrated lymphocytes), (b) partly from clasmatocytes and small clasmatocyte-like adventitial cells skirting the blood vessels, (c) the vast majority from the blood vessels through emigration. In spite of twenty-five years endeavor to prove this view, pathologists are not prone to accept it. While there are few who do not question or deny the developmental power of the lymphocyte, many others maintain that the lymphocyte is a finished product. In spite of evidence to the contrary, the prevailing opinion still seems to be that hemic lymphocytes do not emigrate for subsequent development and differentiation. Pathologists, as a group, are strong in holding the fixed perivascular connective tissue cells responsible for the exudates. Primary amongst these are the so-called Marchand adventitial cells located adjacent to capillary and vascular endothelium. The varied morphology of these cells led Maximow long ago to interpret these structures as simply modified previously extravasated lymphocytes. In all his work he found no evidence for a cytopoietic activity in the production of free wandering cells from this type of cell.

At present there is a tremendous discussion taking place regarding the significance of the "endothelial leucocyte". What does the term mean and where does the respective cell come from? Variously termed, it is known as macrophage, polyblast, clasmatocyte, resting wandering cell, large mono-nuclear histiocyte, hemohistioblast. Are these different cells or have they a common parentage? In a recent series of papers Foot, with emphasis, repeatedly stated that vascular endothelium, notably that of the capillaries, is responsible for the production of these free wandering cells. Fontana, prominent pathologist of Italy, in a recent monograph on endocarditis lenta, maintains that the disease is characterized by a large percentage of endothelial cells . . . . cells that in his opinion have been sloughed off from generalized vascular endothelium. The irregular, often spindle-shaped, cells found in the blood films of endocarditis lenta are so prevalent that they may be stated to be specific for that disease. Thus, in some cases, he found as high as 18 per cent of these cells in the white corpuscle count.

In recent German literature Oeller, Toppich and Siegmund reported that during anaphylactic shock the vascular endothelium responds with an almost immediate desquamation of endothelial cells. Moellendorff and his pupills have in his recent months repeatedly contended for a participation of vascular endothelium in the production of free wandering cells. Even Marchand, who originally advocated the adventitial cells as the parental cells, has in his recent publications adopted the view of his pupil Herzog, namely that the adventitial cells themselves are derivatives of vascular endothelium. For Marchand, Herzog seems to have cinched the argument; for experimenting with the tongue of living frog, previously injected with India Ink, Herzog was able to see carbon-laden endothelial cells separate themselves from the vessel wall and migrate out into the tissue. This experiment was repeated in the laboratory of Maximow by Miss Stilwell with directly opposite conclusions . . . the endothelial cells remained fixed, the carbon particles passed through them and were taken up by adjacent pericytes.

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*Presented before Missouri Valley Medical Association, Omaha, October 31, 1928.

**Died, December, 1928.

With this before us, may we still speak of an "endothelial leucocyte"? Properly understood, there is a justification for that term. It must, however, be restricted to the derivatives of the reticulo-endothelial system. By this we mean primarily the cells lining the lymph sinuses of the lymph nodes, the venus sinuses of the bone marrow and spleen, the sinusoids of the liver, the venous capillaries of the hypophysis and the suprarenal glands. To get away from a confused terminology, Siegmund, and later Maximow, suggested a new term for these generative cells, calling them littoral cells. A better idomatic term would perhaps be riporinal cells. All workers concede that these have the potency to give rise to free wandering cells. Long known, it has repeatedly been corroborated with various experiments. The recently emphasized contention, however, that the general vascular endothelium should be included as instrumental in the production of free cells has to date not been sufficiently proven.

Interested in this problem of a possible origin of exudate cells from vascular endothelium, I sought material presenting the maximal infiltrations known to pathology. None seemed more promising than those of encephalitis, of which twelve cases were studied. What was the result?

Initial infiltration was best noted in cross sections of capillary tubes. Here lymphocytes were frequently seen having a uniform marginal seriation. Many vessels showed active emigration pictures, i. e., hemic cells migrating through the endothelial wall. In quantity the exudates varied from one to eighteen rows in depth. In all these types we found emigrating lymphocytes and large mononuclears. Marcora, in his report on encephalitis stated that emigration of lymphoid cells could not be demonstrated. Super-imposed or oblique sections of cells might erroneously be taken as emigrating cells. Bearing this in mind, thin serial sections were made with the result that frequently one could follow from section to section the cut components of the emigrating cells.

In transit through the vessel wall the lymphoid cells displayed a varied morphology. Prevailingly dark round masses with pronounced pseudopods, the cells were frequently twisted into curved or dumbbell-shaped structures in an effort to pass to extra-vascular territory. Thin strands of nuclear material running from the capillary lumen to a main cell body located in the third or fifth row of lymphocytes, indicated that the emigration process was at times slow and arduous. In one instance accurate measurement showed a flagellum-like protrusion of nuclear material to be 33 m. in length.

In a soon to be published work on lues, undertaken this summer from the same standpoint of investigation, I again repeatedly encountered lymphocytes and monocytes in transit through the vessel wall. What is more, I had the good fortune of seeing these emigrating cells as imbedded or "fossilized" structures in a gound matrix, the product of a hyalinization process which affected the vessels and adjoining territory in some of the cases.

To return to present considerations, after extravasation, the behavior of the lymphoid cells varied. Whilst some of them retained their hemic aspect, others hypertrophied into large structures, becoming transformed into polyblasts, macrophages, granular cells and occasionally into plasma cells. Prevailingly the differentiation was polyblastic, often giving rise to similar pictures as recorded by Maximow years ago in his aseptic experiments with agar-agar injection.

Another proof for the hemic origin of the exudate cells is the fact that frequently blood vessels were encountered showing a stream-like orientation and migration of lymphoid cells into the parenchyme. Densely aggregated in the immediate vicinity of the vessel wall, the migrating cells became less and less numerous in areas at somc distance from the vessels.

Extremely significant for a non-endothelial origin of the exudate cells is the fact that in not a single instance, (and this was quite a vast material covering over six months of study), did I ever observe an endothelial cell in division. Furthermore, in not a single instance was it obvious or could it be proven that the vascular endothelium participated in the production of free wandering cells by way of a rounding up process of its constituent cells. Cytogenetically considered, the vascular endothelium was always normal. No evidence was forthcoming that any other perivascular connective tissue cells, for example the so-called Marchand adventitial cells, participated in the formation of free exudates. What did happen was that in certain instances the endothelium showed intermittant breaks; these served as passageways for the lymphoid cells into extra-vascular territory.

When beginning this study of polioencephalitis and encephalitis, I had hoped to be able to distinguish the two groups on a histo-pathological basis. There has been some work to that effect maintaining the pictures to be totally different in the two types of disturbances. In our material the histological pictures were the same. No criterion was forthcoming to allow a differentiation of the two on a purely exudate basis. If anything, polioencephalitis was characterized by a severer degree of focal infiltrations.

These were centers of intense glia activity and mobilization with many of the constituent cells transforming themselves into free compound granular cells. Such centers showed interspersed histiocytes, polyblasts and a varying number of small and medium-sized lymphocytes. Lympoid foci were met with both near blood vessels and in regions far removed from them. The former type afforded ample evidence for a differentiation of emigrated lymphocytes into compound granular cells (gitter cells) which morphologically were indistinguishable from those of neuroglia origin. As evidenced by intergrades the process was accomplished through increase in size of lymphocyte cell body accompanied by a progressive vacuolization of cytoplasm, indentation and final eccentric displacement of nucleus. The finished product in common with the granular cells of glia origin frequently acquired a phagocytic character. A mesodermal origin of a quota of the glitter cells met with in encephalitis is, therefore, to be admitted—a contention heretofore not sufficiently emphasized.

Summarizing our conclusions it may be stated that, as far as polioencephalitis and encephalitis are concerned, vascular endothelium cannot be held responsible for the production of the exudate cells met with in the lesions occurring in the central nervous system. On the contrary the vast majority of the infiltration cells represent recently emigrated lymphocytes and large mononuclears, with a quota to be interpreted as homoplastic derivatives of previously extravasated lymphoid cells.

On the basis of this work (published in the *Archives of Path. and Lab. Med.*, Nov., 1927, Vol. 4), the American Medical association gave me a grant to continue this problem of round cell infiltration in lues. This was done this summer in conjunction with Dr. Globus, who again attended to the clinical considerations of the cases studied. A detailed report of this work on lues will soon be given. For the present it may be stated that the same stereotype pictures appear in lues as in encephalitis. Vascular lesions were in instances much more extensive. In all the nervous tissue investigated no evidence was forthcoming for an endothelial origin of exudate cells. Areas of brain softening displayed a generalized loosening of tissue; the last to round up into irregular masses . . . never into completely round structures . . . were the endothelial cells. In the new work on lues we have been able to show that endothelial cells do separate from the vessel wall. Such detached endothelial cells, however, never round up into polyblastic, free wandering round cells, but either retain their characteristic endothelial aspect or become transformed into fibroblast-like structures indistinguishable from local fibroblasts. This observation is by no means new. A quarter of a century ago Maximow reported the phenomenon in his classical study of inflammatory reactions and recently claimed a similar behavior for the endothial cells in explants of various tissues.

BEHAVIOR DIFFICULTIES IN CHILDREN ASSOCIATED WITH THE RESULTS OF BIRTH TRAUMA

Paul L. Schroeder, Chicago (*Journal A. M. A.*, Jan. 12, 1929), makes a comparative study of children with cerebral palsy and birth injury and concludes that difficult labor tends to determine behavior problems which, however, are chiefly the result of mental retardation. Distractibility and hyperactivity are characteristic personality traits in the birth traumas but no behavior difficulty is specific. Children with cerebral birth injuries who do not develop palsies show the behavior characteristics and mental retardation common to those with cerebral birth palsies. Differences in behavior that occur in this group are largely explained by the absence of orthopedic handicap. Children with cerebral injury at birth who show distractibility and hyperactivity, although free from birth palsies, should, therefore, be included in the classification of the results of birth trauma.

MECHANICAL PRINCIPLES INVOLVED IN MANAGEMENT OF PURULENT PLEURITUS (EMPYEMA)*

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Empyema, as it most commonly occurs as a late sequel of pneumonia has been treated with satisfactory results in such a large proportion of cases that interest in a discussion of it is aroused with difficulty. The time-honored dictum regarding pus in general "Evacuate and provide drainage" is too readily accepted as the primary indication.

Not infrequently the expected relief of dyspnoea and subsidence of toxic manifestations fails to occur and in their stead the respiratory and circulatory embarrassment are intensified. The patient rapidly progresses to a fatal termination. It is then tardily recognized that some unforeseen clinico-pathologic factors had existed.

That opinions regarding some phases of empyema are widely divergent is evident from comparison of the statements of C. H. Powers in Ochsners Surgery vol. 2, p. 262 and of Everts Graham in *Surgery, Gyn. and Ob.* 1921, page 60. The former says "The finding of hemolytic streptococcus is an urgent indication for radical drainage in all conditions" while Graham stresses the importance particularly in hemolytic streptococcus cases of avoiding open thoracotomy and urges treatment by closed drainage methods.

The experience in army cantonments and in civilian practice during the epidemic of 1917-18 brought to our attention forcibly that empyema that accompanies influenza presents a clinical variety quite different from the usual post- pneumonic type and that principles of management safely applicable to the latter cannot be carried out in the former.

In influenza empyema occurs early in the disease process even within 3 to 5 days after the onset. At this time there is extensive intra-pulmonary pathology such as areas of peribronchial consolidation, multiple intrabronchial abscesses or definite broncho- pneumonia ,the effect of which is to greatly reduce the vital capacity and embarrass the right heart. The effect of open pneumothorax is to reduce vital capacity in proportion to the size of the opening and if this is done at a time when vital capacity is already at a point near the minimum compatible with life a fatal termination is inevitable. In post-pneumonic empyema the pneumonia has usually passed the crisis and its functional capacity is restored before the empyema is evident.

Numerous hypotheses have been presented to explain the cause of death after thoracotomy for empyema. Most of these were based on purely theoretical grounds although some had the support of experimental and clinical evidence. A tabulation of the causes assigned to fatalities in open pneumothorax include the following:

1. Collapse of lung (most early authors).
2. Mediastinal flutter (Murphy).
3. Displacement of heart (Kocher).
4. Pressure against mediastinum (Garre).
5. Collapse of intra-pulmonary vessels (Sauerbruch).
6. Loss of vagus stimulation (Sauerbruch).
7. Pressure upon large veins of right heart (Gerrulanos).
2. Reflex closure of the glottis.
9. Reversed respiration in collapsed lung (Kocher, Garre).
10. Increased toxemia through lymphatics.
11. Reduction of vital capacity (Graham).

Collapse of the lung was the enigma of all early thoracic surgeons. It was believed that whenever the thorax on one side was opened to any degree that the lung of that side immediately and completely collapsed and its function was totally lost. The statement was made and frequently reiterated in early contributions that death was inevitable if both thoracic cavities were opened. This statement is found in recent texts and periodic literature, although it has been positively refuted clinically both by the recoveries after bilateral traumatic open pneumothorax and by surgically induced bilateral thoracotomy for empyema. Animal experiment has also proved that bilateral thoracotomy is not necessarily fatal, but on the contrary is compatible with life up to the limits of fairly large openings. Collapse of the lung after thoracotomy is never complete. A further fallacy is often quoted as fact with reference to the relation of the size of the opening to the size of the glottis. This statement is that if the size of the thoracotomy exceeds that of the glottis complete lung collapse will occur while if the thoracotomy is smaller than the glottis collapse will be incomplete. Collapse is not complete even though the opening is much smaller than the glottis.

More or less collapse of the lung occurs in every thorocotomy. The degree of the collapse is dependent on the size of the opening. The opening may be sufficient to reduce the vital capacity to a degree incompatible with adequate aeration of the blood, but the size of the opening essential for this result is much larger than comes into consideration in ordinary thoracotomies for empyema. Further consideration of the mechanics of open pneumothorax will be considered under the caption of reduction of vital capacity. It is sufficient here to point out that the collapse of the lung to the extent induced by ordinary surgical open thorocotomy for empyema is not in itself a possible cause of death. It is only when other factors such as associated pneumonia or cardiac decompensation are present that such a collapse can appreciably add to the danger.

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*Third of a series of articles on Thoracic Surgery to be published periodically in the Journal.

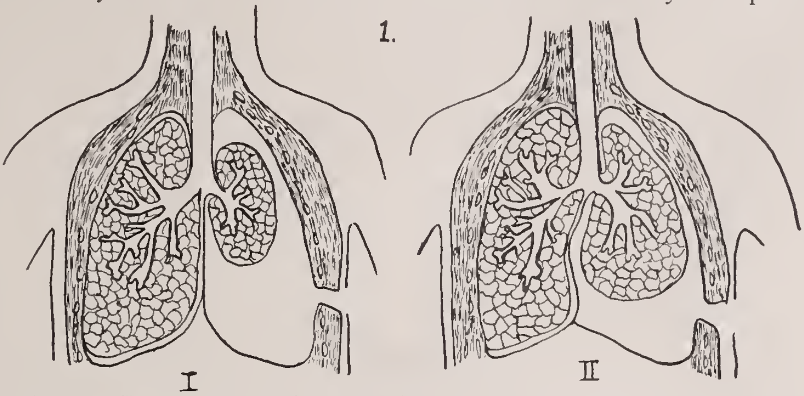

Figure 1. Illustrates the old and new conception of mechanics of thoracotomy.

I. Represents the mediastinum as a rigid partition. The left lung is completely collapsed and the right unaltered.

II. Represents a mobile mediastinum with collapse of the two lungs equal. The degree of collapse depends upon the size of the opening.

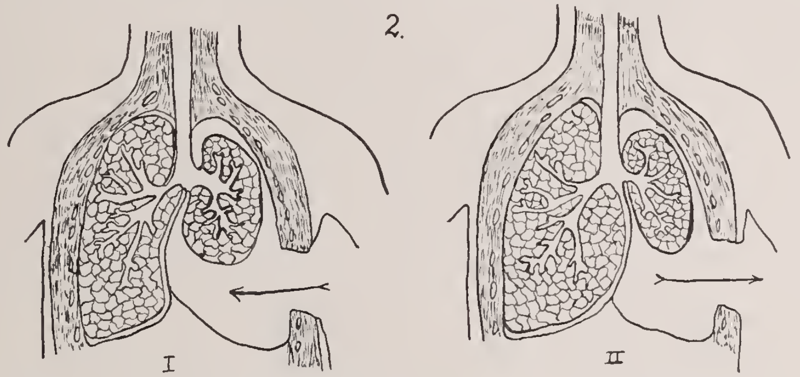

Figure 2. Illustrates the mediastinal flutter. With each inspiration the mediastinum moves to the unopened side and reverses with each expiration.

Mediastinal Flutter. Murphy observed in animal experiments that large open thorocotmy caused a to and fro suction on the mediastinum which he called fluttering of the mediastinum. He attributed death to this phenomenon apparently assuming that such a motion fatally impeded respiration and circulation. Improvement in the condition of the experimental animal could be obtained by immobilizing the mediastinum with instruments or by pulling the lung through the thorocotomy opening.

Whether resulting from the so-called mediastinal flutter or from other associated factors, the desperate condition of a patient that may follow a sudden thorocotomy is improved by temporary closure of the opening by pulling lung through it or by placing the patient so that he lies on the side of the opening or by filling the thoracic cavity with normal salt fluid which is then gradually withdrawn. It is claimed by some authorities that a lung re-expanded by one of the above measures does not again collapse to the same degree. There is no question now but *that the mediastinum normally is markedly mobile,* and this mobility of the diaphragm is an important consideration in the mechanics of open pneumothorax. It is not established however that a fluttering of the mediastinum per se could seriously nullify the effectiveness of the respiratory excursion.

Displacement of the heart was formerly looked upon as an important factor in fatalities from open pneumothorax. Kocher advanced this theory. It is probable that a certain degree of interference with cardiac function may be induced by a suddenly produced malposition of the heart. However in slowly developing hydro-thorax the heart is often displaced to an extreme degree without serious disturbance of function. Also after phrenecotomy and pneumothorax obliteration of a tuberculous lung, the heart will rotate and ascend with the diaphragm to an extreme malposition in the upper left thorax without great circulatory embarrassment. The theory that displacement of the heart is an important influence in the causation of death, appears to be untenable in the face of these facts.

Pressure against the mediastinum was proposed by Garre as the disturbing mechanism. The respiratory excursion of the remaining functioning lung was supposed to be inhibited by this pressure. The pressure against the mediastinum may be actually greatly reduced when open thorocotomy is done in the presence of a large diffuse empyema as is evidenced by the spurt of pus through needle, tube or opening against the atmospheric pressure. Pressure against the mediastinum offers no clear explanation of the disastrous results in thoracotomy.

Sauerbruch has stressed the importance of the *collapse of intrapulmonary vessels* with resultant right heart embarrassment. This is a valuable contribution to our understanding of the factors that increase the operative risk although it is probably not the chief cause of serious embarrassment of respiration and circulation. Any lesion that collapses or compresses intra-pulmonary vessels increases the work on the right heart. Such an effect is produced by consolidation as in pneumonia, caseous tuberculosis abscess, bronchopneumonia as well as by the collapse of the lung. The associated lesions in empyema are therefore to be considered as adding further embarrassment to the right heart, as well as restricting the aeration capacity of the lung. The blood-pressure reading is accepted by Sauerbruch as a measure of the cardiac embarrassment in thoracic surgery. If blood-pressure is low he delays the operation until it can be raised by heart stimulation.

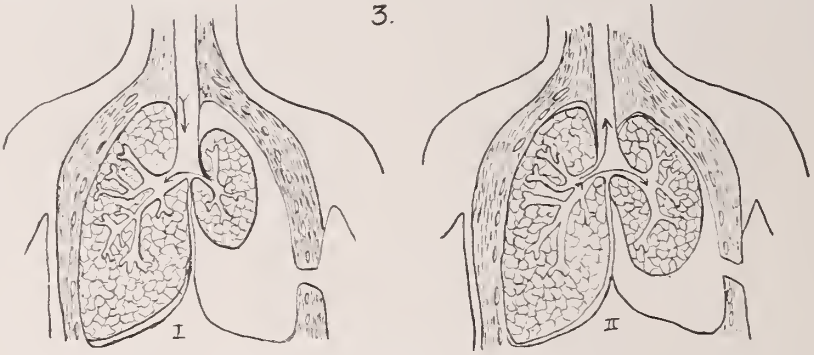

Figure 3. Represents theory of reversed respiration. Kocher and Garre attached great importance to this phenomena as cause of death in open thorocotomy. Not demonstrated experimentally.

Gerrulanos is the chief advocate of the *pressure upon the large veins* of the right heart as the chief disturber. There is no experimental evidence to support this hypothesis.

It is claimed by some recent as well as earlier authorities that a reflex spasm of the glottis sometimes occurs as a result of pleural irritation. This has been assigned as the cause of an occasional precipitate death following a minor instrumental irritation of the pleura as by simple thorocentesis.

Increased toxemia via the pulmonary lymphatics brought about by the release of pressure against the visceral pleura has been suggested as a cause of the rapid increase in symptoms following open thorocotomy. It was supposed that the pressure of the pus against the pleura tended to compress and close the lymphatics and that when this pressure was rapidly reduced the lymphatics were open and permitted free absorption from the inflamed pleura. The fact that similar though possibly not such extreme release of pressure occurs in aspiration or in closed thorocotomy without the occurrence of aggravation of symptoms controverts this theory.

Reversed respiration or rebreathing from one lung to another is another highly ingenious theory without experimental demonstration. The following diagrams, figure 3, appear in Bickhams System of Operative Surgery to illustrate this phenomenon. With each expiration from the good lung air is forced into the collapsed one and with efforts at inspiration the air is again drawn from the partially collapsed to the unaffected lung. If such a situation existed the result would be evidently cyanosis and asphyxia from rebreathing.

Reduction of Vital Capacity. The foregoing theories have attempted to explain the phenomena which eventuate in a purely mechanical situation incompatible with life. Each of the effects of open pneumothorax outlined above interfere more or less with free and complete expansion and contraction of the lung or with interchange of intra-pulmonary gases. The ability of the lung to inspire and expire air is interfered with in some measure by partial collapse of the lungs, also by mediastinal displacement and flutter if the latter occurs. This ability is certainly reduced also by lesions that obliterate or fill the vesicular spaces with exudate. Any of these factors that either collapse pulmonary tissue or compress alveolar walls by exudate or congestion undoubtedly decrease the breathing capacity or vital capacity of the patient at the same time they embarrass the right heart. In the presence of pneumonia and empyema either alone or combined there is, of course, a greater or lesser degree of toxemia. It seems quite acceptable, therefore, that in empyema the death triad involves

1. Reduction of vital capacity.
2. Embarassment of the right heart.
3. Toxemia.

Toxemia increases metabolism and the demand for oxygen. The tidal air is thus raised. Embarrassment of the right heart adds impaired circulation to further retard oxidation processes.

The vital capacity is the greatest volume of air that can be expired after the fullest possible inspiration. A certain amount of air (residual air) remains in the lung after the most complete expiration. The term tidal air designates the amount inspired during quiet respiration. Complemental air refers to the volume inspired after ordinary inspiration to make up the vital capacity.

Figure 4 illustrates the various phases of inspiratory excursion under varying condition of health and disease.

4.

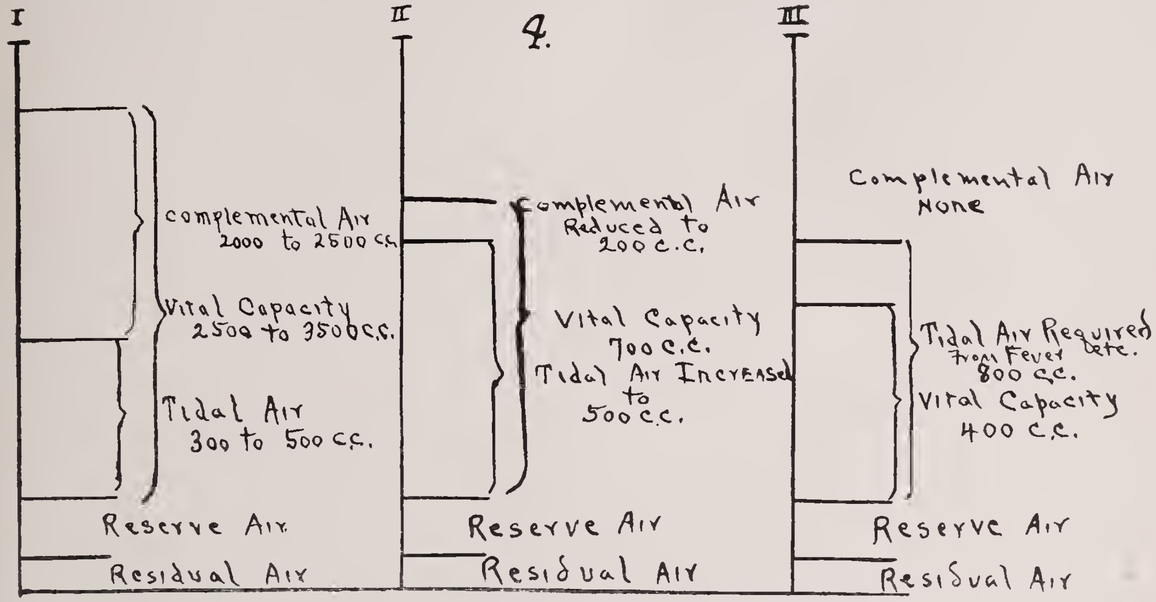
I
II
III
complemental Air 2000 to 2500 c.c.
Vital Capacity 2500 to 3500 c.c.
Tidal Air 300 to 500 c.c.
Reserve Air
Residual Air
Complemental Air Reduced to 200 c.c.
Vital Capacity 700 c.c.
Tidal Air Increased to 500 c.c.
Reserve Air
Residual Air
Complemental Air None
Tidal Air Required from Fever etc. 800 c.c.
Vital Capacity 400 c.c.
Reserve Air
Residual Air

Figure 4. Illustrates the relation of the various respiratory phases in health and disease.

I. Shows the normal condition. The complemental or compensatory capacity is greatly in excess of ordinary requirements.

II. Shows moderate reduction in vital capacity but still well above the level of tidal air. Respiration is embarassed but sufficient for life.

III. Shows reduction of vital capacity below tidal air. Death is inevitable. Tidal air requirements are increased by fever and toxemia but reduction of vital capacity prevents attaining it.

5.

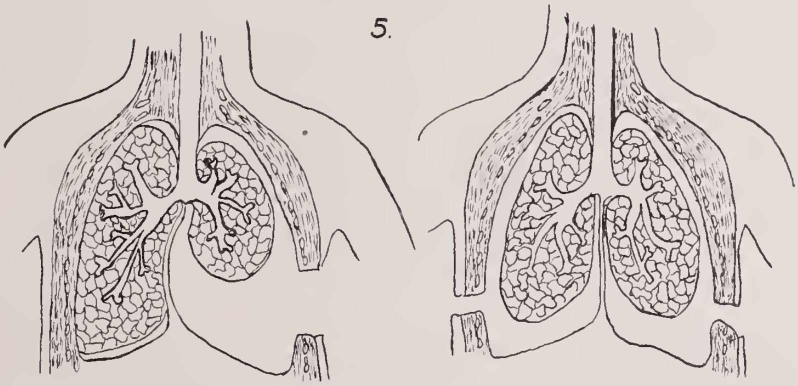

Figure 5. Illustrates the comparison between a large unilateral opening. (1) and bilateral openings. (2) equals the size of (1). The total reduction in breathing capacity is the same. Migration of the mediastinum is neutralized.

Everts Graham in *Surgery, Gynecology and Obstetrics,* (1921), reports experimental study in dogs of the mechanics of thorocotomy. He demonstrated that after thorocotomy the collapse of the opposite lung was equal to that of the side operated. This result is due to the mobility of the mediastinum. The older opinions that considered the mediastinum as a rigid partition was shown to be erroneous. The reduction of vital capacity resulting from thorocotomy therefore effects both lungs equally. He stated that for practical purposes the thoracic cavity could be considered a single rather than a double chamber. These experiments further proved that there was a direct ratio between the size of the opening and the amount of the collapse. The greater the opening the more reduction in vital capacity and this is true in the same proportion whether there is a single opening on one side or bilateral openings whose combined sizes were equal to the unilateral one.

Figure 5 illustrates the effect of bilateral and unilateral *thoracotomies* whose combined sizes are equal.

The purpose of complemental air (amount above usual inspiration) is, of course, to compensate for unusual demands from exertion, fever, etc. Whenever the vital capacity is reduced to the amount of the tidal air freedom from dyspnoea will depend on refraining from exercise or exertion. Lessening vital capacity reduces the patients ability to withstand unusual demands and if it is lower than the tidal air (300 to 500 cc.) and lower than can be compensated for by compensatory increase of respiratory excurscions death must ensue. Tidal air is necessary to life. The maximum size of the opening that can be tolerated by a man with a vital capacity equal to the average of 3700 cc. is eight square inches. It is immaterial whether this opening is single, unilateral or bilateral if the combined size is the same. According to Graham and others of the empyema commission during the world war the essential cause of death in influenzal empyema was reduction in vital capacity. The pneumonic lesions are generally extensive when the empyema develops because it appears early as a complication of influenza. The vital capacity is already very low from intra-pulmonary lesions and to add to this the additional reduction that ensues after open thoracotomy often brings the level below tidal air with consequent fatality. In post-pneumonic empyema that generally appears after the pneumonia has passed the crisis this additional reduction in vital capacity is not present and early open thorocotomy is not attended with the same dangers. The principle which has been forcefully declared by competent authority at various periods in the past that no open thorocotomy should be performed early in empyema seems to be not widely accepted. At the beginning of the influenza epidemic in the World war, for the treatment of empyema the common practice was early open thorocotomy. The mortality was appalling and immediately lessened when this practice was stopped. Pathologists were unanimous in reporting the two outstanding lesions in the lung at autopsy on fatal cases of influenza were first peribronchial infiltration and multiple intra-bronchial abscesses and second dilation of the heart. With these lesions in mind it is easy to understand that in this diseases the vital capacity is very low. This lowering of vital capacity was evident clinically in many patients by cyanosis. If in such a case empyema existed and an open thoracotomy was performed early while the pneumonic infiltration was still active the further reduction in vital capacity resulting from partial collapse of both lungs would seriously or fatally embarrass the effectual respiratory function. The toxemia and fever and heightened metabolism increase the demand for oxygen so that a compensatory exaggeration of the usual respiratory excursion exists. Tidal air demands are raised while complemental or reserve air capacity is lowered. In short the multiplicity of lesions within and without the lung in influenza empyema greatly reduces vital capacity. The further reduction that results from open thoracotomy is often sufficient to reduce the vital capacity to a point below tidal air which is a situation incompatible with life.

In lobar pneumonia with empyema the same factors may come under consideration when the empyema develops early in the course of the pneumonia. It is usually a late complication and is not in evidence until the pneumonia has subsided and the vital capacity is partially restored thereby. This explains the fact that open thoracotomy may be performed with greater safety as soon as diagnosed in this type of empyema.

INSIDE INFORMATION

A little negro schoolgirl, down in Florida, in answer to the question "What is anatomy?" wrote the following:

"Anatomy is a human body. It is divided into three parts—the haid, the chest, and the stummick. The haid holds the brains, if there is any; the chest holds the liver and lites, and the stummick holds the entrails and the vowels, which are a, e, i, o, u, and sometimes w and y."—*Minnesota Med.*

NEW SYSTEM X-RAY THERAPY

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It may not have occurred to all that as great developments have taken place in the production of x-rays as has taken place in other electrical lines during recent years. In view of this fact, it seems appropriate to sketch briefly those changes which have taken place and because of the era in which I have lived, have become a part of my experience.

At the time I began doing x-ray work it required an exposure of ten minutes to make an x-ray image of the hand on a photographic plate. Under modern technic, instantaneous exposures of a fraction of a second can be made of the thickest parts of the body producing far better detail than was formerly possible. The same improvement has taken place in the therapeutic application of x-rays as has just been mentioned in their diagnostic uses.

In fact, we might divide the time since the discovery of the x-ray by Roentgen, 1895, into four periods, each period representing a step forward in x-ray therapy.

The first period, 1896-1913, represents the early days of x-ray treatment when the electrical apparatus for producing the x-rays appears almost toylike when compared with that used today. Naturally the output of x-rays was small in quantity and of little penetrating power. The x-rays of that period were only suitable for the treatment of skin diseases. In spite of those limitations, excellent results were obtained in dermatology and even today no better technic has been developed than that formulated by the pioneers. Well do I remember those early days in my career when serving under the excellent instruction of my beloved preceptor, Dr. J. P. Lord, who had a large volume of x-ray treatment work. My task, from early morning until 10:00 or 11:00 o'clock at night, was to give those treatments. A room filled with generators, the wall covered with electrical switches, a small x-ray tube from which soft x-rays in only small quantities could be obtained, required both time and patience to produce results. Yet, as I worked, I had the pleasure of seeing epitheliomas and many other skin lesions disappear and leave the patient completely cured. That training has proven priceless in my experience. One thing impressed upon me was the value of the "fractional dose" method of treatment to which I shall refer later.

The second period in x-ray therapy extends from 1913 to 1920 and its beginning corresponds with the advent of the Coolidge tube. Previous to 1913 we had the so-called "gas tube" which was a vacuum tube which had been incompletely exhausted, a small portion of the air having been left inside the tube upon which the electric current could pass from anode to cathode. This type of tube was limited in output, was uncertain in its behavior and could be used for only short periods of time each day. This necessitated having six to twenty tubes about the office so that one suitable for the work in hand could be picked out. One who has never actually worked under those conditions can scarcely appreciate the joy experienced by one who has, upon using the first Coolidge x-ray tube.

The Coolidge tube differs from the "gas tube" in that it is a complete vacuum. Since electricity will not pass through a vacuum, a small filament of wire is introduced into the cathode in such a manner that it can be heated, thus giving off electrons on which the electric current will pass from anode to cathode and thus produce the x-rays. With this device it is found that when the filament is real hot, x-rays of little penetrating power suitable for treatment of skin diseases are given off and when the filament is less hot x-rays of more penetrating power suitable for treating deeper lesions are produced. This quality made it possible for one Coolidge tube to do the work of many "gas tubes". Not only could the one Coolidge tube replace several "gas tubes" but the quantity and quality of x-rays desired could be duplicated day after day, thus eliminating much of the guess work which had been necessary before. The use of the Coolidge tube also made possible improvements in the electrical power plants used in producing current for x-ray tubes so that this period is marked by defniite advance in the treatment of enlarged glands and tumors situated subcutaneously.

The third period extends from 1920 to 1926, its announcement creating a sensation. This is called the period of high voltage x-ray therapy. Voltages of 200,000 were now available for producing x-rays, which made it possible to treat tumors situated in the deeper parts of the body. Not only were the x-rays thus produced sufficiently penetrating to reach deep-seated tumors but it was soon found that they had a more pronounced effect on tumors than any x-rays previously available. Since this method of x-ray therapy originated in Germany, where massive single doses were advocated, this same technic was, at first, employed in America. It was soon found, however, that equally desirable effects on the tumor could be produced if the "fractional dose" method was applied instead of the "massive dose" method. When the "fractional dose" was used, the patient was disturbed much less by the treatment and the pronounced constitutional effects and prolonged period of recovery were less noticeable. Although the "fractional dose" method was used in high voltage x-ray therapy many patients complained of the odor of ozone and other nauseating fumes which were produced by the sparks at the rectifying disc. Others were disturbed by the noise so that many schemes were devised to do away with these unhappy accompaniments of the treatment. None of the attempts were wholly satisfactory until 1926 when an entirely new scheme of making electric current suitable for producing high voltage x-rays was introduced. This device ushered in the present period of x-ray therapy and is acknowledged by all to be a great step forward.

The advantages of the new system* of high voltage x-ray treatment are grasped at once by patients who have been treated by both the old and the new method. The new system is noiseless, doing away entirely with the crackling of the sparks at the rectifying disc and with the hum of the motor. The new system is odorless, so neither the patient nor the operator suffer from the nausea and headache so prevalent previously. The same dosage is given in much less time minimizing the fatigue of the patient lying on the treatment couch.

The new system does not produce interference with radio reception in the neighborhood.

From the technical standpoint one can see other advantages as well as those apparent to the patient. Due to the construction of the new system x-ray equipment, the electrical current is applied constantly to the x-ray tube instead of in short hammerlike blows. This fact accounts for the greater output of x-rays in a given time, the output being as much as 155% of that under the old scheme.

Not only is the quantity produced in a given time greater, but the quality of the x-rays is more homogeneous so that greater depth doses in tumors are possible and better effects are obtained.

The output of the new system equipment is uniform and can be accurately duplicated day after day, which is quite different to the variation of 25% to 50% which was found by the most careful operators under the old method.

The new system of high voltage x-ray equipment is not affected by variations in altitude or change in humidity. This means, that where this type of equipment is employed, the patient treated in the high altitude and dry air of the Rocky Mountain states will receive the same benefit as one treated at the seashore where the air is very humid.

All of these improvements made possible by the new system of high voltage x-ray therapy naturally give better results in the treatment of disease than has heretofore been possible.

The following case reports give concrete illustration of cases suitable for this class of x-ray therapy.

Case No. 32575. C. F. R., male, 65 years of age, came complaining of enlargement of the left tonsil and a lump in the left side of the neck accompanied by difficulty in swallowing. The patient says that about two months ago, he noticed a swelling on the left side of the neck which he thought was some swollen glands. About three weeks ago he noticed difficulty in swallowing and at the same time the lump on the side of the neck began to grow and has grown very rapidly until now it is the size of a goose egg and is situated just below the angle of the jaw.

Physical findings: The left tonsil is enlarged to the midline of the throat but there is only a small tendency to breaking down shown as an ulcer on the surface. The glands of the left side of the neck are as large as a goose egg with several smaller ones in the posterior triangle. X-ray examination of the chest shows no evidence of metastases. Otherwise the physical examination is negative.

The diagnosis is sarcoma of the left tonsil with metastases into the left cervical glands.

Treatment: High voltage x-ray treatment was administered in such a manner as to give an 86% dosage into the depths of the tonsil with 100% on the skin surface.

Result: Within two weeks the tonsil had returned to normal size and the glands in the neck were barely palpable. This decrease in size continued until there was no growth demonstrable either in the tonsil or neck.

Case No. 31909. Mrs. A. C. The patient is a married white woman, 47 years of age who complains that during the past two years she has begun to lose her pep and that during the last few weeks she has noticed a pressure in the pelvis against the rectum and bladder. Along with these latter symptoms, she has developed pain in the left arm which she thinks is neuritis.

Physical examination is entirely negative except for multiple nodules, 1 to 3 cm. in diameter, on the body of the uterus.

Diagnosis was uterine fibroids.

The treatment consisted of high voltage x-ray treatment through the pelvis, administering 77% into the uterus. The patient had no inconvenience from the treatment and the pressure symptoms gradually subsided until within five months the nodules were no longer palpable.

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*A. Muscheller, Uniform Voltage vs. Pulsating Currents in Clinical Deep Therapy. Radiology, Feb., 1927.

Case No. 26798. Mrs. J. K. The patient is a married white woman, 38 years of age. She came complaining of swelling in the abdomen which has existed for the past two years, during which time she has been able to feel a tumor projecting down from under the edge of the ribs on the left side. At the same time that this condition has been going on she has become weak and unable to do her work.

Physical findings show the spleen is palpable and occupies the left half of the abdomen, extending down to the iliac crest and three fingers to the right of the midline. The blood count showed erythrocytes 3,500,000; leucocytes 609,000; hemoglobin 60%; differential: polymorphonuclears 38%; small lymphocytes 4%; large lymphocytes 2%; eosinophiles 1%; basophiles 7%; neutrophilic myelocytes 34%; eosinophilic myelocytes 3%; basophilic myelocytes 11%.

Diagnosis: Splenomyelogenous leukemia.

Treatment: High voltage x-ray treatment was administered through the spleen so that the central portion of the spleen received a dosage of 65%. The blood count rapidly dropped down to near normal,—erythrocytes 3,400,000; leucocytes 8,400; hemoglobin 75%; differential; polymorphonuclears 73%; small lymphocytes 12%; large lymphocytes 5%; eosinophiles 5%; basophiles 3%; myelocytes 2%.

This patient has continued well for two and one-half years during which time she has received an occasional series of high voltage x-ray treatment.

Case No. 31074. H. S., a white male, 24 years of age, farmer by occupation, who had had a previous decompression operation for a subcortical infiltrating tumor in the left temporoparietal region. At the time the patient presented himself for treatment he had a bulging in the left temporoparietal region at the site of the previous decompression, was unable to walk unassisted and was very dull mentally. Otherwise the physical examination was negative.

Treatment: High voltage x-ray therapy was given in such a manner that the depth of the tumor received 78% dosage. Marked diminution in the size of the swelling occurred and the patient recovered sufficiently so that he was able to walk unassisted and to do light work.

Case No. 32515. F. B. A white male, 68 years of age, came complaining of shortness of breath. He says that four months previously he suffered from a double pneumonia. The left side cleared but the right side remained so he could not get air into it.

Bronchoscopic examination showed stoppage of the major bronchus in the right lower lobe accompanied by bleeding upon passage of the instrument. Following this bronchoscopic examination, in a short time the bronchoscope was introduced again and lipiodol injected. X-ray made following the lipiodol injection showed an obstruction of the right lower lobe of the main bronchus. X-ray examination showed an area of infiltration in the right lower lobe with occlusion of the major bronchus near the bifurcation. There was also partial collapse of the lower lobe.

The diagnosis was primary bronchus carcinoma, following which high voltage x-ray treatment was given accompanied by rapid diminution in the size of the infiltration in the right lower lobe and marked improvement in the patient's ability to breathe and in his general condition accompanied by gain in weight of ten pounds.

Case No. 27135. Mrs. G. W. U. A married white woman, 34 years of age came complaining of having had the right breast removed for carcinoma four weeks previously.

At the time she came, physical examination showed a hard infiltrating mass about 5 cm in diameter in the infraclavicular space.

A diagnosis of extension of the carcinoma into the infraclavicular lymph glands was made.

High voltage x-ray treatment was given following which there was rapid diminution in the size of the mass, reduction in the swelling of the arm and decrease in the pain, accompanied by gain in weight and general physical improvement.

Case No. 30210. Mr. D. P. A white male, 72 years of age, came, saying that seven years previously he had had the prostate removed following which he made uneventfu recovery and remained well until six months ago when he noticed difficulty in getting the urine to start. During this time he has also noticed considerable pain in the pelvis and on several occasions has seen blood in the urine. Recently it has been necessary for him to be catheterized several times.

Physical examination shows a hard nodular mass in the prostatic region. This mass is fixed and is about the size of an orange. There is no evidence of metastases into the bones or elsewhere in the body.

Diagnosis of carcinoma in the prostatic region, recurrent after prostatectomy was made, following which high voltage x-ray treatment was administered so that the tumor dose was 90%. Following this treatment the patient was able to urinate freely, was only compelled to arise once or twice at night and the pain was greatly diminished. He has continued in good physical condition for more than one year.

Case No. 24879. Mrs. J. W. A white woman, 42 years of age, who had had a hysterectomy for malignancy six months previously. She comes now complaining of a large mass in the lower abdomen.

Physical examination shows a smooth mass filling the entire pelvis and extending up almost to the navel. A report of the microscopical findings showed she had sarcoma of the uterus for which the hysterectomy had been done.

Diagnosis of recurrent sarcoma was made, following which high voltage x-ray treatment was administered in such a manner that the tumor mass received 100%. The mass rapidly decreased in size and within a short time was no longer palpable. This patient has been well for more than four years.

CASE REPORTS ILLUSTRATING DIAGNOSTIC PRINCIPLES IN SEXUAL PSYCHOPATHOLOGY*

MILES J. BREUER, M. D., F. A. C. P.,

The fact that it requires a good deal of personal courage to stand up in front of even a medical audience and discuss frank sex matters, is in itself pertinent to the theme of this paper. Sex phenomena exert at least as definite and extensive an effect upon the mental and physical health of the individual as does his diet; sex impulses and sex thoughts occupy at least as large an area in his consciousness and in his living program as do matters connected with eating. We discuss openly all other matters of clinical physiology and pathology; yet grave defects in the health and normal living of our patients are allowed to persist because we act in our meetings and in our writings as though there were no such thing as sex; or rather as though details of sexual matters were something to be ashamed of in public and to wink knowingly about in private.

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*Read before the Lancaster County Medical Society, November 11, 1928.

The relatively scant literature on the subject is largely didactic and contains a dearth of clinical material. Only Ellis(10), Robie(19-20-21-22), and Robinson actually report a mass of clinical material in a scientific manner. However, what literature does exist has established a few broad principles upon which diagnosis and treatment may be based; and the purpose of this paper is to report a few cases illustrating these principles. In my own observation, I have found that my cases run fairly true to the generalization laid down in the literature (to which references are appended) providing my history material was accurately obtained. But, in general, histories are extremely difficult to obtain. People will conceal, suppress, and deny persistently facts about their lives, even though coincidently admitting that it would be best for them to tell everything frankly. In the general run of cases the only way to get a dependable history is for the physician to recognize the probable trend of the disorder from its general features and then extract the history from the patient by cross-examination in detail, pinning him down in turn on each item. This can only be accomplished at the expense of a great deal of time and patience, and only after the patient's friendly confidence has been gained.

The cases are presented in abstract only; and if they seem to anyone too elementary, I excuse their simplicity on the ground that even that little seems not to be very widely understood.

1. Marion S., age 4, was brought in by her mother who stated that the child was having some sort of pains in the lower abdomen. She had been to a number of physicians and the diagnosis had been all the way from pyclocystitis to epilepsy; but no relief had been obtained within a year. A careful study revealed a normal, healthy child. Then, questioning developed that the mother thought the child had such pains because the little one was in the habit of putting her hands on her genitals and going through strange contortions of face and body. After some patient observation I was able to see the child in one of her "attacks". There remained no doubt that it was a case of infantile masturbation. To train her out of it was not at all difficult, though the methods used were pedagogical, not medical; i. e., reward, punishment and education. In two months she had ceased the practice as far as close observation could determine. It was not possible to elicit any history of sex deviation among her relationship, which, of course, does not mean that it did not exist.

This case, of course, raises the question as to whether the child's disorder was fundamentally sexual. She was too young to ascribe to her any sensations connected with reproductive psychology. But, the fact that it was the genital area that was the source of pleasurable sensations that could be aroused in no other way establishes them as definitely sexual; and the case seems to me confirmatory of the modern point of view that reproductive purpose is not the only component of sex psychology(11-24). However, the differing conceptions of the functions of sex nevertheless agree that its purpose is to bring together two individuals; therefore, the spontaneous use of sex attributes for self-gratification at such an early age is distinctly abnormal, and suggests that in such cases a regimen of hygiene and observation be advised as prophylactic against the development of future perversions.

2. Dorothy S., age 11, daughter of an osteopath; complaint of "nervousness", tremors, constant fear of something about to happen; sleep restless and fitful, filled with dreams of explosions and bright lights; inability to eat, loss of weight, poor progress in school. Duration three months; previous to that she had been in excellent physical and mental condition. On physical examination no abnormalities were found. After seeing her the third time I learned that her father had been "preparing" her according to modern ideas for the approaching onset of menstruation. He handled the subject in hushed and tremulous whispers, and made of it a vast and vague transfiguration, but had actually told her no details of what to expect. That was quite sufficient to produce her symptoms, among which undernutrition and retardation in school are material enough to appeal to anyone. The indications for treatment were obvious. I impressed her with the fact that her menstruation might not yet begin for several years, and when it did, it would be a matter of a little bloody fluid appearing from the genitals, for which she would have to wear a napkin for a few days each month, etc., making the explanation as prosaic and commonplace as possible, and illustrating a lecture on female physiology and anatomy with cuts from anatomy texts. In six weeks she was back in normal condition.

We hear a great deal about sex instruction for the young at the present time. The correct sort is necessary and beneficial, but the wrong kind is worse than none at all. It takes a person who is trained not only in medical affairs, but in child psychology to do this sort of thing successfully. Neither ministers, teachers, Y. M. C. A. or Boy Scout leaders, nor physicians are adapted to the work without special training.

3. Miss Edna H. Age 22; dysmenorrhea: Severe pain at every menstrual period, necessitating several days' stay in bed; duration ever since her menstruation began at the age of 15. She had had several examinations by competent men without the discovery of any pathology; also some examinations by other men, one of which resulted in an appendectomy

and ovariotomy without relief. Chiropractic treatments gave her some relief. She was a delicately balanced, high-strung girl who took life very seriously. Since her early teens she had gone with boys and had one close affair after another; this continued throughout her college course; though her relations with the boys never went beyond the roadside necking party in an automobile. She also danced a great deal.

I explained to her that her dysmenorrhea was due to unrelieved sexual tension; and to get rid of it she would either have to quit associating so closely with the young men, or else marry one of them. She refused to do either, and preferred the partial and temporary relief afforded by luminal. At one time I succeeded in persuading her to spend six weeks at the Y. W. C. A. camp at Crete; as a result of that she had three normal menstrual periods. But she soon returned to her old life and her old pains. She drifted out of my hands and I have recently heard that she has had another operation.

The above is the report of an individual case; but with a few slight changes it would do for several dozen of which I have histories, and for numerous other cases that I have seen and not accurately recorded. Modern civilization has given woman a great deal of mental and physical liberty; but she will go through a great deal of suffering yet before she adjusts to the anomalous sexual situation in which the unmarried and strictly moral business or professional woman of today is placed, the constant society of and frequently admiration for men with whom she is well acquainted; her constant reading and talking of sex matters, resulting in sexual stimulation for which no natural relief is possible.

In married women, the great majority of cases of sexual psycho-pathology that get into the hands of the clinician comprise the mental and physical results upon the woman of the husband's precipitate abruptness in coitus or his lack of skill and understanding in handling a woman. The following cases illustrate three of the types of failure of adaptation on the part of a woman to such a situation.

4. Mrs. Ella Z. Age 28, has one daughter 6 years old, her husband is a railway section foreman. I answered an emergency call to her home and found her in convulsions surrounded by an excited group of people. As soon as I approached the bed she broke away from the two women who were holding her and threw herself against me. She threshed from side to side of the bed, rolled over and over, and groaned loudly. Obviously it was not an organic convulsion. I sent everybody out of the room and sat down and waited. When she quieted down I asked her to tell me what was on her mind. Of course, she didn't know definitely, but in the course of several visits I got the story. Her husband was a physical Apollo, but by disposition a coarse brute; whereas she was sensitive and well bred. She had these hysterical attacks periodically, but had not the least idea that they were due to the fact that she had to submit to short, gross, abrupt acts of coitus from a man who disgusted her, and to a terrific fear of another pregnancy. All efforts to make her husband see things in a more humane and mutual light failed; he was a hopeless brute. But, explanations did help her to a better understanding of the situation. She had never suspected that coitus was anything else than a brutality; she blamed the institution and not her husband; and her hysterical convulsions were an effort to escape from his attentions. I suggested contraceptive methods and the use of conscious reasoning to get relief from her situation. She gradually adjusted to her situation, remaining with her husband on account of the child, but having no more convulsive attacks.

5. Mrs. Millie J. Age 30. This lady wrote to me stating that she was losing her mind and asking me if there were any relief. The letter showed more insight than was probable in a psychopath, and when she came in for an interview this opinion was readily confirmed. Her symptoms closely resembled those of the depressive phase of the maniac-depressive psychosis; but the absence of any evidence of a cycle, and the very obvious cause for a neurosis in the history were sufficient to establish a diagnosis. This patient was constitutionally strongly sexed, and during the early months of marriage had derived satisfaction from the sex relation in spite of her husband's lack of skill and understanding. But eventually she noticed that he preferred to spend his time downtown than with her, neglected his work, and manifested no evidence of affection toward her. Gradually she became thoroughly disgusted with the act of coitus, but still retained an intense affection toward her husband. This confused her, and she confessed to having several times handled a butcher knife with suicidal contemplations.

After some efforts at persuasion, the husband made a trip to visit me. He turned out to be a man of good common sense, though totally uneducated. He comprehended my explanations and was very willing to cooperate. My instructions to him were to the following effect:

(1) That a woman is less readily and rapidly sexually aroused than a man, and that if she is to derive satisfaction and avoid distress from it, time, effort, skill and consideration on the part of the man are necessary.

(2) That a married woman is physically in need of the thing that to a man of his physical vigor and lack of sentiment might seem trifling: i. e., all the detailed manifestations of affection that are known as petting and love making.

(3) That his own greatest reward in happiness and satisfaction both mental and physical would come if he disregarded his own desires and worked constantly with his wife's needs and pleasures in mind. That is not sentiment, it is physiology; and, of course, is true of both parties to the act of coitus. My correspondence with these two people indicates that at the present time they are normal and happy.

6. Mr. and Mrs. F. G's. troubles were discovered accidentally during a period in which I took care of two of their children. She is the nagging wife; she scolds and criticizes her husband; nothing he does is satisfactory or right. There are several quarrels a week, and numerous periods when they do not speak to each other. She is 45 and he is 47 years old, and both are negative for physical defects; yet neither of them feels well; numerous and varying complaints keep coming up. Mr. G. is the typical high-pressure business man, absorbed in his business life, providing well for his family financially, but otherwise neglecting them. His business preoccupation is both the cause and the effect of his domestic defection. His father was the same before him and he was trained so at an early age. He regards sentiment as a weakness, and yet periodically is physically compelled to yield to it. He is disturbed by his own inconsistency

and feels ashamed of himself because he is not controlling his baser nature as rigidly as he desires. For a long time he refused to talk freely about himself and his ideas.

Here is a home in which the children were periodically treated to quarrels and bickerings, in which the husband and wife are constantly miserable, all because the husband will not admit that sex is a perfectly proper and vitally necessary part of his life, but considers it a hindrance to his business and represses it until it breaks out like an abscess, instead of training it to be a beneficial factor in the health and happiness of himself and his family.

This case is not yet completed; such conditions cannot be corrected overnight. It requires months and even years of training to overcome them at the age which these people have reached. But, after three months of effort there are already signs of improvement. A son at the university tell me that the home has become a more pleasant place; mother is not so cross and father is more of a companion than he used to be. Mr. G. is difficult to convince, being a hard-headed business man; but I accomplished a good deal by letting him read some of the case reports in my books and journals.

Natural frigidity in women is not as common as was once supposed. There are a good many cases of female frigidity, but these are readily recognized as being due to misdirected training during childhood building up inhibitions, or to lack of proper technic on the part of the husband. Both classes of apparent frigidity can be corrected by educational methods; in the former case the efforts are directed at the wife, in the latter at the husband. The following is a case of apparent frigidity.

7. Mrs. Ruth Z. Age 30. Came for relief of palpitation of the heart, dyspnea, and precordial pain. There was indeed a slightly deficient heart function as indicated by the cardio-respiratory test, and the electrocardiogram showed an occasional ventricular premature systole. However, the complaints were out of proportion to the physical evidence. During the effort to elicit other, possibly psychic causes, she volunteered the information that she derived no pleasure from coitus whatever. At the same time she insisted that she loved her husband superlatively and that his treatment of her was perfect. I marked at the time that her insistence on her affection for him and on the excellence of his treatment of her were unusually emphatic for a case of normal married happiness. Eventually, this became the main feature of the case: she wanted to know why she was frigid. It took me a number of weeks to arrive at the solution. She was very strongly sexed, as evidenced by her alertness in the presence of and her attention to men, and her love for dancing in spite of a total lack of rhythmic sense. I eventually learned that her husband was a gay blade, addicted to drink and promiscuous ladies. She had heard vague rumors of this and had refused to listen to them; she had denied to herself even the possibility of the truth of them. Under my questioning she admitted her fears; as a result of my advice that she check up on the matter accurately, there were tears and heartaches, but no more organic heart symptoms. The apparent frigidity was now admitted to be a repressed dislike in a strongly sexed woman of her husband's personality.

Numerous cases of apparent frigidity are caused by fear of pregnancy. Under fairly primitive and natural conditions the thought of pregnancy does not deter a woman from coitus; but the pressure of civilized economic conditions adds inhibitions that produce a definite neurosis. The relief for it lies in contraceptive methods, which, however, will not be discussed here, but to which references are given in the bibliography. The following is evidently a case of natural female frigidity.

8. Mr. F. C. B., age 35, superintendent of schools in a small town. Came primarily for the treatment of an acute cystitis, during which his other complaint was elicited: coldness and numbness in the legs; nervousness and tremor on talking to people; feels that he is losing his grip. Has fainted once or twice. Terribly depressed most of the time. Used to have seminal emissions frequently a few years ago, but these have ceased. A very careful physical examination showed no organic defects. Married eight years before; his wife had taught school before marriage and all the time since. He was an intelligent man, and careful questioning failed to elicit any defects in his methods of handling his wife from the very beginning. Yet, she had never responded to his efforts in the least. She had always refused to discuss the matter of sex relations; she would not come to Lincoln for a conference with me on the subject. I advised that he get away from his home for the summer; last summer he traveled in the western part of the state, selling insurance, and came back a transfigured man, with all of his old self-confidence back. He sees his problem clearly, and is contemplating divorce, which the physician may suggest indirectly, but ought not advise openly.

The literature contains numerous references to the fact that one of the commonest causes of physical and neurotic complications in sexual relationships is the practice of contraception by means of *coitus interruptus* or withdrawal(33). My personal observations agree with this. The following is a case in point:

9. Mr. and Mrs. O. W. P., ages 30 and 20. I first saw the wife at the home during an attack of intense menstrual pain. She menstruated at irregular intervals, usually very short, and always with intense pain. This dated back to her marriage. She is somewhat undernourished and has a subnormal basal metabolism. A very interesting point from the standpoint of Freudian psychology is that she dreams frequently and repeatedly that she cannot find her way home. She has a psychic background, having been a child of separated parents and brought up by a strait-laced, inconsiderate aunt.

The husband also submitted his complaint, which was epigastric pain of the spastic and hyperacid type. He was a weary, gloomy looking man, in the fruit commission business. Careful study showed his gastric symptoms to be a neurosis, and his undernourishment due to food restrictions produced by the fear of his stomach symptoms. His symptoms also date back to his marriage.

The couple were not well off financially and did not wish a baby until they were on their feet in business; although both of them had powerful sex natures, they were practicing contraception by withdrawal. It is now several months since I explained to them my theory of the cause of their trouble and instructed them in the use of Cooper's method of contraception(25). Their improvement was slow, probably because it took some time for the idea to become thoroughly established in their heads. But eventually their symptoms disappeared; they gained weight, and their gloomy, worried faces have cleared up, without any further treatment.

The above cases have been relatively simple, and illustrative of elementary principles of sex psychology and physiology. I shall close with one that was somewhat more complicated and presented some difficulties in diagnosis.

10. Mrs. Frank S., age 47, wife of a village blacksmith; complaint, palpitation of the heart, weakness, twitchings, insomnia. The first thought was that her symptoms might be due to menopause; but her menses were going on normally, and menopause is not a disease, whereas she was in considerable real distress. She had already had a hysteropexy, a trachelorrhpahy, and a perineorrhaphy for her symptoms without relief. Her physical examination was negative except for a vagina which was so stenosed that it would not admit two fingers. The stenosis was due to a perineal band and had probably followed the perinorrhaphy, for she had two grown sons. With the idea that this might be interfering with normal coitus and thus causing her symptoms, the stenosis was relieved by dividing the band. She reported back in two months, worse rather than better. At that time her sex history was more carefully gone into, and she told a curious story of how her husband approached her sexually with unusual frequency, and yet seemed to be impotent to perform the act. Somebody had told her that this was due to syphilis.

Her husband came for examination at my request, and my study disclosed a robust, thoroughly normal man. He was unable to explain the conduct that his wife had described. It was only after I had studied him for several days that I found evidence, in the history of his periods of irritable depression alternating with periods of excessive and aimless activity, of a definite psychosis. That is two years ago; since then he has been three times in a state hospital, where the diagnosis was manic-depressive psychosis. His wife has forgotten her symptoms and is absorbed in caring for him. In this case, althugh it was the wife who presented herself with the complaint, the husband was the one who had the real illness.

Many of the things I have here brought out, seem trivial and commonplace. Yet, they are the things that bring patients to the physician. It might seem that people ought to be able to solve such simple things themselves. But people don't. If it is not the physician's duty to help them, whose is it?

I am sure that many who read or hear this paper will have cases more interesting and instructive than these. Since sex difficulties are fundamental to so many of the complaints that present themselves to us, and for which we are constantly seeking somatic explanations and material treatments, yesterday pelvic surgery, today endocrinology—I wish to urge that more material of this sort be brought to light, discussed, and interpreted with therapeutic and prophylactic aims in view.

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SYPHILIS OF THE LUNG*

Clinical and Pathological Report of One Case

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Incidence: From the sixteenth to the latter half of the nineteenth century, "syphilis of the lung", or "phthisis a lue venera" was a common diagnosis. The condition was described by Morgagni, Laennec, Virchow and others. The diagnoses were made upon gross appearance alone, or the occurrence of pulmonary pathology in known syphilitics, and no clear demarcation was made from tuberculosis, brown induration, gangrene, and chronic lymphangitis. With the differentiation of syphilis from the other venereal infections, the discovery of the tubercle bacillus and treponema pallidum, and the widespread use of the Wassermann test, the number of cases of pulmonary syphilis has markedly decreased until now a proven case is a rarity.

Howard$^{(1)}$ at Iowa City reported on seven cases among 11,982 medical admissions. Four of the seven come to autopsy, and Howard states there are not over 200 acceptable cases of pulmonary syphilis in the medical literature of the world. Claytor$^{(2)}$ in 1905 found not a single example in the 13,000 specimens of the Army Medical Museum. In a search through the London Museums in 1895 only ten examples were found. Osler$^{(3)}$ records only four instances of the acquired type in 2800 postmortems at the Johns Hopkins Hospital. Kolisko of Vienna saw only 100 examples in a vast autopsy experience. Symmers$^{(4)}$ at Bellevue reports two cases in 314 autopsies on syphilitic cases. Carrera$^{(5)}$, using the pathological criteria of Warthin, studied the lungs of 152 autopsied cases of syphilis in Warthin's laboratories and found twelve examples, a higher rate than other pathologists. Carrera states that the clinical diagnosis of pulmonary syphilis has been made too often, and that in four years experience in Madrid he did not see a single pneumopathy ascribable to lues, although he examined hundreds of syphilitics. The pathological diagnosis is easier, but made more rarely than the clinical.

Clinical Aspects: The clinical diagnosis of pulmonary syphilis is usually made on the continued absence of tubercle bacilli from the sputum, a positive Wassermann reaction on the blood, physical signs and symptoms of pulmonary disease, supposedly characteristic x-ray findings, and marked improvement under anti-syphilitic therapy. According to Howard the symptoms are those of any chronic lung infection, and have been analyzed by the Karschners$^{(7)}$ in 120 cases selected from the literature. Cough occurs in about 90% of the patients. It is usually constant, troublesome, and may be paroxysmal, especially if bronchiectasis develops. Sputum varies from mucopurulent to nummular, and is present in seventy per cent of the patients. It may be three layered in bronchiectasis, and very foul if gangrene occurs. It contains pus cells, many bacterea and lung detritus; even bits of fibrous tissue and gummata have been recorded. One observer has reported the finding of treponemata pallida in the sputum, but the difficulty of differentiating this organism from buccal saprophytic organisms has made this claim doubtful.

Haemoptysis occurred in 37 per cent of the Karschner cases. This is rare compared to its frequency in tuberculosis. Dyspnoea is present in one-third of the patients. Sometimes it is out of all proportion to physical signs. It is ascribed to toxemia, laryngeal involvement, or tracheal stenosis. Pain in the chest, pleuritic if in the sides, behind the sternum if of mediastinal origin, occurs commonly. Hoarseness may be due to specific laryngitis or involvement of the recurrent laryngeal nerve. Fever, sweating, and emaciation are rare.

According to Howard$^{(1)}$, in a majority of cases there are extensive physical signs suggesting effusion, thickened pleura, consolidation, or cavity formation. Rales are the most constant finding. Signs may be insignificant, however, or be absent in spite of marked subjective symptoms. In one-half of the cases the involvement is bilateral. According to the Karschners$^{(7)}$, and contrary to the older writers, the upper lobes are more commonly involved.

The roentgenological differences between pulmonary syphilis and tuberculosis are pointed out by Watkins$^{(8)}$ as follows: "Tuberculosis tends to invade the upper lobes. The characteristic shadows are found surrounding the apical or subpleural lobules. The shadows show a definite relation to some branch of the bronchial tree. Syphilis tends to invade the lower and middle lobes and to involve the tissue at the hilum first, so that the densest shadow is there, diminishing toward the periphery. The shadows do not bear a distinct relation to the bronchi, and at their edges have either a ragged worm eaten appearance or the lining is evenly speckled, or there are lance-like radiations of dense elastic tissue". Howard believes with the Karschners that there is no characteristic roentgenogram, and points out that Watkins' claim to finding 170 cases of pure lung syphilis among 6,500 chest plates (an incidence of 2.6 per cent) alone invalidates his claim to a pathognomonic x-ray picture.

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Complications: Gangrene and pyopneumothorax are rare. Syphilis and tuberculosis may coexist and can be recognized.

Dieulafoy(9) in his clinical lectures recognized six types of pulmonary syphilis: 1. Syphiloma, with acute febrile course, simulating acute tuberculosis or tubercular broncho-pneumonia. 2. Syphiloma of slow course, simulating ordinary chronic tuberculosis and phthisis in the stage of cavity. 3. Bronchopulmonary syphiloma, with fibrosis or sclero-gummatous lessions, simulating chronic pneumonia and cirrhosis of the lung, with or without bronchial dilatation, pleurisy, or tracheo-bronchial adenopathy. 4. Syphilitic gangrene. 5. Syphilitic pneumopathy, complicated by pulmonary tuberculosis. 6. Hereditary pulmonary syphilis.

PATHOLOGICAL TYPES

Rukstinat(10), in reporting a case from LeCount's laboratories, states that there are five generally accepted pathological types of the disease in the acquired form: The gumma; chronic interstitial pneumonia, gradually leading to another type, extensive pulmonary sclerosis; bronchopneumonia; and a mixed form sometimes called "syphilitic phthisis", in which pneumonia, gummas, fibrous changes, cavity formation and bronchiectasis may coexist, sometimes with gangrene.

The case we are recording exemplifies the gummatous form, and conforms with the histological pictures described by Carrera(5). It is the only case of pulmonary syphilis encountered in the last 600 autopsies at St. Joseph's and Douglas County Hospitals.

Case report: C. M., a colored female, age 44 years, was admitted December 13, 1927, to the Douglas County Hospital on the service of Dr. M. C. Howard. Her complaints on admission were those associated with a complete cardiac decompensation. The history obtained at this time was as follows: Seven months previous she had first noticed dyspnoea on exertion, which gradually increased in severity. This was accompanied by swelling of the extremities and an enlargement of the abdomen. Her condition during the past few days had rapidly grown worse and she was admitted in a semi-comatose state. She died twelve hours after admittance. Her past history is negative other than she had given birth to two children, but had never had any miscarriages. Physical examination showed an emaciated but oedematous patient. The vessels of the neck showed a marked pulsation. In the supra-sternal notch a pulsating mass was felt. Over the base of the heart loud systolic and diastolic murmurs were heard. The apical sounds were somewhat obliterated by the moist rales in the lungs. The abdomen was distended with fluid, while the lower extremities were oedematous. A clinical diagnosis of an aortic aneurism with a syphilitic myocardial degeneration was made.

Anatomic diagnosis (Dr. J. J. Duffy). Syphilitic aortitis with two saccular aneuryisms, one just above each of the posterior aortic valve cusps; gumata of the lower lobe of each lung; passive congestion of the kidneys, liver, treachea, and bronchi; acute fibrinous pleuritis (right); hydropericardium (250 cc); hydroperitoneum (3000 cc); anemic infarct of the spleen; edema of the lower extremities; hydrosalpinx (right); fibrous pelvic peritonitis.

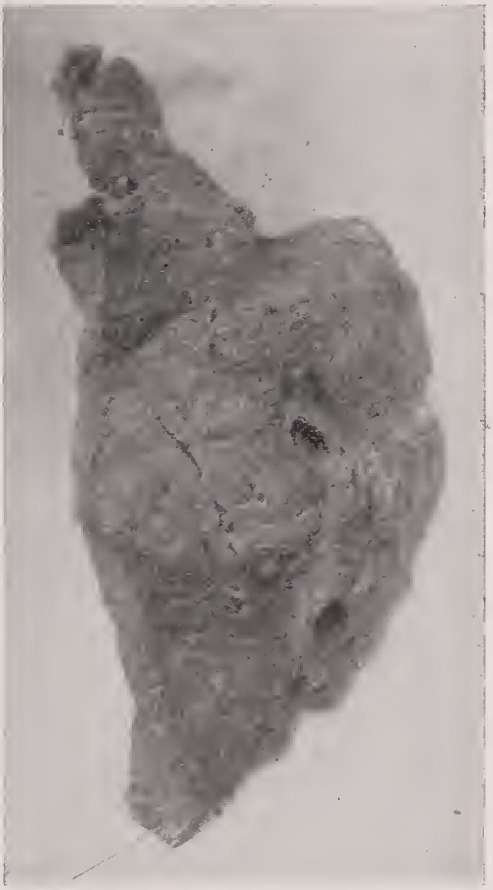

Figure 1. Portion of lower lobe of right lung showing gummata.

Necropsy: In the lower lobe of the right lung beneath the pleura there were some firm resistant areas over which the pleura was roughened and covered with fibrin. Just above the diaphragm in the lung substance at its anterior margin was a necrotic area.

Sections through the lung revealed a number of irregularly outlined yellow to grey nodules in the lung substance. These areas were up to 3 cm. in their greatest measurement and the smallest was about 2 mm.; they were opaque in some areas, smooth on the cut surface, in others rather spongy and granular. They had no well defined capsules and their outlines were wavy. On further section some areas were round and their centers were necrotic and could be scraped out; they were rather clover leaf in outline, resembling tuberculous broncho-pneumonic areas. At one place near the hilum of the lung there was a mass of lymph nodes, and in one of them was a tiny calcified nodule. Repeated sections through the partially collapsed lower lobe of the right lung revealed numerous such caseous regions.

Microscopical: In large paraffin sections of the lungs, stained with hematoxylin and eosin, there are seen gummata of varying sizes, varying from miliary to five low power fields in diameter. In a typical, well developed gumma there are three well defined zones, a central caseous region, a thin intermediate fibrous zone, and a peripheral granulation tissue zone. The central zone occupies about five-sixths of a given nodule, and is composed in most cases of the poorly staining alveolar wall outlines enclosing coarsely granular material, fibrin-like threads, desquamated necrotic or fatty epithelial cells, nuclear fragments, some lymphocytes, some endothelial leucocytes, and a few polymorphonuclears. Only an occasional nucleus is stained in the remains of the alveolar walls. In a few of the walls the outlines of capillaries containing rows of erythrocytes can be seen. The intermediate zone is composed of plasma cells, while there is considerable fragmented nuclear material scattered about. The outer aspect of this zone is invaded by many capillaries. The outer zone is broader than the middle, and is made up of large numbers of capillaries, newly formed fibrous tissue and dense collections of plasma cells and lymphocytes. In the miliary gummata the caseation has not yet taken place in the central zone, and the outlines of alveoli are obscured.

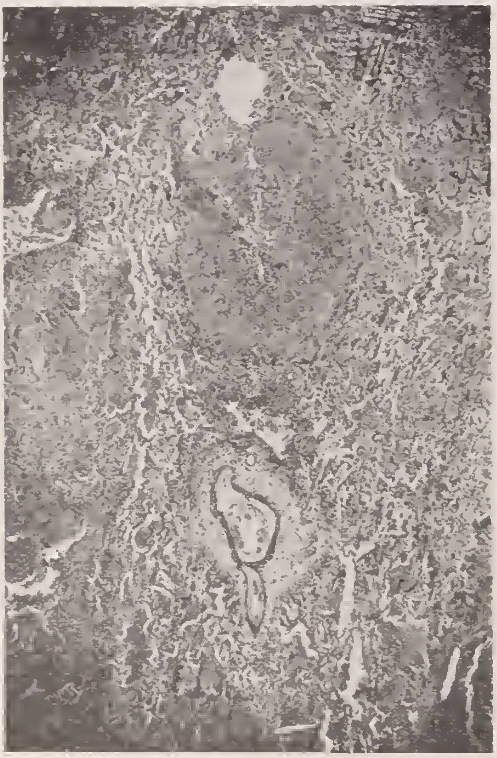

Figure 2. Photomicrograph of small gumma, lower lobe, right lung.

In sections stained by Verhoeff's elastic tissue stain, uneven preservation of the elastic tissue is evident. In some caseous regions, or in parts of some caseous regions it has disappeared, while at the periphery it is usually better preserved. Carrera(5) found that in general the elastic tissue was better preserved than in tuberculosis.

In sections stained by Weigert's method for fibrin many of the alveoli in the caseous zones are seen to be filled with fibrin. In addition the alveolar walls in the caseous zones of the gummata are irregularly outlined in blue from fibrin deposits in the capillaries.

Sections stained for acid fast bacilli, and others stained by the Levaditi and Warthin-Starry silver-agar method for Spirochetes, revealed no organisms. According to Carrera(5) spirochetes have been found in the lung tissue of acquired pulmonary syphilis only by Koch, Schmorl, and Warthin.

The lung tissue between the gummata is atelectatic, while the alveolar walls are thickened. Within the alveoli are numerous desquamated epithelia, some of which are loaded with brown granules. Some alveoli are filled with phagocytic cells.

The involvement of the medium sized and smaller arteries is marked in all sections. There is such marked fibrous thickening of the inner coat that in some instances the lumen is reduced to a mere point. There is a moderate proliferation of the elastic tissue of the intima, but the bulk of the proliferation is composed of collagenous fibers. There are large numbers of plasma cells scattered through the thickened intima. The middle coat of the vessels is well preserved. There is excessive plasma cell infiltration of the adventitia with new capillaries and elastic tissue, while the plasma cell infiltration extends indefinitely into the surrounding lung tissue. These changes in the arteries coincide with those described by Carrera(5) as typical of syphilitic arteritis and he regards them as so typical that they alone fix the diagnosis. One large artery in the sections exhibits only atherosclerosis. In some small arteries there is extreme vascularization of the intima along with the plasma cell infiltration.

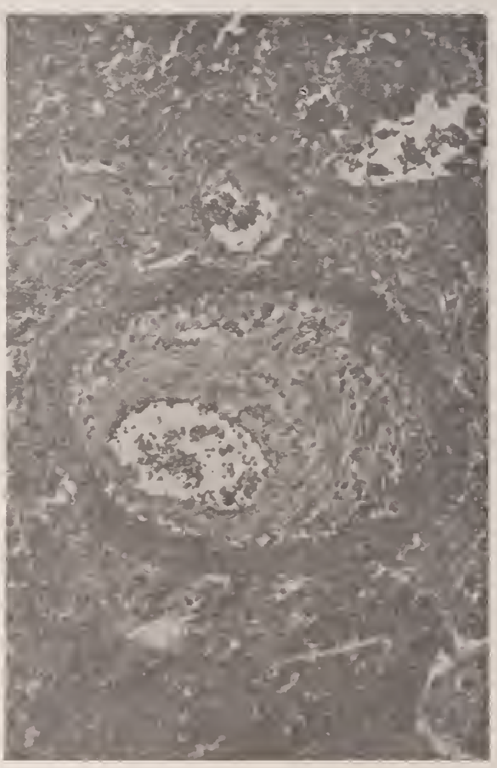

Figure 3. Photomicrograph of small artery in lung, showing marked thickening and plasma cell infiltration of intima, characteristic of syphilis.

No giant cells are found in any sections. In the lung tissue outside the gummata there is in many regions a marked fibrosis, especially around the blood vessels. In all these regions are many plasma cells. Carrera(5) states that such plasma cell infiltrations are differential diagnostic points indicating syphilis.

SUMMARY

Acquired pulmonary syphilis with gummata is rare. The gummata of the lung resemble gummata elsewhere and can be differentiated histologically from a tuberculoma. Syphilitic arteritis in the case presented was quite distinctive and widespread. Spirochaeta pallida were not found in the lungs of our one case and have only rarely been demonstrated. The discrepancy between clinical and autopsy incidence of pulmonary syphilis is due to the more rigid criteria of the pathologist. The histological findings conform accurately with those given by Carrera$^{(5)}$.

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TETANUS WITH RECOVERY*

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I have not seen many cases of tetanus, but it so happens that I have seen two cases within the past month. One was tetanus neontorum I saw near a small town in Iowa. The baby died; I gave him 1500 units of antitoxin, but he died.

The baby was six days old when I first saw him and he had been sick forty-eight hours, so it was about four days after the birth of the baby before tetanus developed.

I saw the next case a short time afterwards; a boy thirteen years old, always healthy and well; two other children in the family, healthy and well; father distinctly luetic ;the children evidently have no tendency of that sort. The boy was somewhat backward in school, did not learn easily. On September 23rd he was struck on the chin with an arrow; this arrow had been lying in a pile of rocks for approximately a week. Five days later Dr. Rudolph Rix gave him fifteen hundred units of tetanus antitoxin. The wound was very slight, but the doctor is a surgeon and fortunately for the patient had established that routine. One week after the injury the patient complained of being chilly; had difficulty in swallowing; had slight headache; his face twitched slightly at times; he was unable to open his mouth; the jaws became locked. At no time did the temperature exceed 101 degrees. When I saw the case, eleven days after receipt of the injury, the jaws were locked. Mentally he was alert and did not seem ill, except that he could not open his mouth. He was not hyperesthetic. He was removed to the hospital eleven days after he received the injury and ten thousand units of tetanus antitoxin given intravenously. Ten thousand units were given intraspinously the next morning, or twelve days after the injury. Ten thousand units were given intravenously and five thousand intramuscularly that evening. The intraspinous injections were repeated daily for three successive days. The intravenous injections were repeated daily for three days. The intramuscular injections were given only twice, five thousand units each injection. In all seventy thousand units were given, exclusive of the original dose. Recovery was uneventful.

Wassermann on the spinal fluid was negative; the boy did not exhibit quite the intense symptoms of tetanus that I have seen. I have seen cases of tetanus where some one entering the room or making the slightest sound would send them into convulsions. This boy showed none of that. I think the fact that Dr. Rix gave fifteen hundred units early prevented severe tetanus.

The incubation period in this case is rather short. The prognosis in most cases of tetanus depends almost entirely on the interval between the receipt of the wound and the treatment. This treatment was given on the seventh day and if the patient had not been given intensive treatment, I believe he would not have made the grade.

The original wound was on the chin. We opened it and cauterized it.

It seems to me in regard to stopping the antitoxin, the whole secret is in giving sufficient antitoxin. I think we should stop the antitoxin when the youngster begins to relax. Generally speaking, at least three injections should be given intraspinally. Magnesium sulphate was not indicated, in my opinion, in this case. The youngster did not have convulsions. Magnesium sulphate is given with the idea of controlling the convulsions and I did not advise it because the patient had no convulsions. Its use is indicated where convulsions are present with the tetanus.

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*Read before Nebraska-Iowa Pediatric Society at their regular monthly meeting, Thursday, October 11, 1928.

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ROSTER OF OFFICERS

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DELEGATES TO A. M. A.

Dr. A. D. Dunn, Omaha	1929
Dr. R. W. Fouts, Omaha	1930

DELEGATE, COUNCIL ON MEDICAL EDUCATION, A. M. A.

Dr. J. S. Welch, Lincoln	1929

MEDICO-LEGAL DEFENSE COMMITTEE

Dr. Roy W. Fouts, Omaha, Chairman	1929
Dr. C. A. Hull, Omaha	1930
Dr R. B. Adams, Lincoln, Secretary	1930

Note: In case of suit notify secretary at once.

LOOKING FORWARD TO THE ANNUAL MEETING

The annual meeting of the Nebraska State Medical Association looms just six weeks ahead. It is high time that you place a circle around those dates on your calendar—May 14, 15, 16—and plan to be in Omaha at that time to partake of the scientific feast of good things being prepared for you by the program committee.

The writer sometimes wonders whether the individual members of the profession realize as fully as they should just what the Nebraska State Medical Association really means to them. The missionary who has worked among the wild tribes of Africa is imbued with the missionary spirit. One who, like the writer, has belonged to the association forty years and has missed but four meetings, may be said the have the association spirit. Having this spirit, it is hard to see why every one does not have the intense active interest in the association and its annual meetings.

The programs are always most excellent, the cameraderie of physicians is most stimulating, the legislative work of the house of delegates is constructive and for the good of all.

The Nebraska profession is the equal of any in the States; its association is surpassed by none. If any member feels bolshevistic or has an inferiority complex with reference to the association, shake it off and march to the tune of the leaders. No matter how well trained you may be you cannot help but learn something at the meeting.

It is too early to give the program in full, but we are privileged to say that Dr. Charles Elliott of Northwestern University will give a lecture on Hyperthyroidism; Dr. Gerald Webb, Colorado Springs, will discuss Tuberculosis; Dr. T. H. Coffeen, Portland, Ore., will talk on Heart Shapes; Dr. John R. Caulk, St. Louis, will demonstrate his Punch Operation and Dr. Carl Hedblom, Chicago, will give a paper on the Surgery of the Chest. In addition to the foregoing, at least twenty papers are promised by members. This will make a full program and it promises to be an interesting one.

THE RECENT COLLEGE OF SURGEONS MEETING AT LINCOLN

The annual meeting of the Nebraska Section of the American College of Surgeons, held at Lincoln, March 14 and 15, was one of the unusual and most successful meetings ever held in Lincoln, about two hundred being in attendance. Credit must be given to Dr. J. J. Hompes, general chairman, all the Lincoln members, and the representatives from the central office for this fine meeting. Those celebrities present as guests, were Dr. Charles R. Scudder of Boston, Dr. Burton J. Lee of New York, Dr. Philip H. Kreuscher of Chicago, Dr. W. W. Pearson of Des Moines, Dr. Wm. E. Lower of Cleveland, Mr. Robert Jolly of Houston, Dr. Malcolm T. MacEachern of Chicago, and Dr. Bowman C. Crowell, Chicago.

The mornings were given over to excellent operative and dry clinics at the various hospitals, and the afternoons to scientific papers and discussions. During both days additional hospital conferences were held at the hospitals and hotel. Three motion picture reels were shown: "Infection of the Hand", "Prostatic Hypertrophy", and "Blood Transfusion". The clinics and scientific papers were all of a very high type. Many matters of interest were discussed benefiting the patients.

On Thursday evening a Community Health meeting was held at St. Paul's Church. About six hundred were present. Excellent talks were given on subjects of general interest to the public. These were accompanied by lantern slides and motion pictures.

The new officers elected were: Dr. Max Emmert, Omaha, president; Dr. J. E. M. Thompson, Lincoln, vice president; Dr. W. L. Shearer, Omaha, secretary and treasurer; Dr. W. F. Langdon, Omaha, Dr. K. S. J. Hohlen, Lincoln, Councilors.

At this meeting two other organizations were brought into life. 1. The Nebraska State Hospital Association, a committee consisting of Mrs. Gladys Smits, Lincoln General Hospital; Dr. Bean, University Hospital, and Rev. Young, Lutheran Covenant Hospital. 2. Through the efforts of Dr. Burton J. Lee of the College Cancer committee, there was organized a Cancer Research committee, others having been created in other cities. The officers of this committee are, Dr. J. S. Welch, chairman; Dr. Geo. Covey, vice chairman, and Dr. Clarence Emerson, secretary. The objects of this committee are:

1. To cause a more accurate, closer and cooperative study of carcinoma occurring in this community by the said committee.

2. To aid the Central committee and in turn to receive aid from the Central Body. In this way it is hoped that more definite information may be obtained in regard to cancer.

—K. S. J. Hohlen.

CANCER CAMPAIGN TO TEACH WOMEN

The American Society for the Control of Cancer is concentrating its educational activities this year upon women. More women than men have cancer, hence the necessity of educating women in matters pertaining to cancer. So far 668,800 pamphlets—"What Every Woman Should Do About Cancer" have been distributed among various national, state and municipal organizations.

The Nebraska Federation of Women's Clubs under the direction of Miss Louise M. Murphy, R. N., Director of Child Hygiene in the State Health Department and Chairman of the Public Health Division of the Nebraska Federation of Women's Clubs of Nebraska is cooperating with the Executive Committee of the Nebraska Division of the American Society for the Control of Cancer in distributing 36,000 pamphlets to the members of the various Women's Clubs of the state. Miss Murphy writes: "I am urging each club woman to see to it that at least two women outside the club membership read the leaflet. We will also send to the non-federated clubs and thus reach many rural women who are isolated and uninformed, a very important group to reach with health education."

Some idea can be gained of the extent of this propoganda by enumerating the various national organizations that are cooperating with the American Society for the Control of Cancer. They are as follows: The National Council of Jewish Women, The Chicago Women's Club, The General Federation of Women's Clubs, The Metropolitan Life Insurance Company, The National Women's Christian Temperance Union, and The National Young Women's Christian Association. In all it is estimated that not less than 8,000,000 women will be reached by these pamphlets.

—Palmer Findley, Nebraska State Chairman.

A REGISTRY OF LABORATORY TECHNICIANS

In accordance with the trend of the times, the practice of medicine is utilizing more and more the services of trained lay help. The advent of the laboratory as an indispensible aid to the diagnosis of disease has created a new specialty in medicine; that of clinical pathology. In order to carry on the numerous technical tests required in scientific diagnostic procedures, the laboratory director has found it necessary to train the technical personnel. With the standardization of hospitals and the urgent call for qualified laboratory assistants there has arisen a demand for proper standardization of the preliminary education and technical training of those enrolled in this new profession.

There has also been a desire on the part of those engaged in this useful calling to raise their status, similar to the evolution of the trained nurse of a generation ago. This want is now being taken care of by a national organization consisting of a body of men who are most vitally interested in elevating the intellectual and technical status of laboratory workers. The American Society of Clinical Pathologists has taken upon itself the task of organizing a Registry of Technicians with rules under which those qualified by education, technical instruction, and moral character will receive a certificate.

The subject is of interest to physicians in every field of endeavor as many of them are desirous of securing the services of technicians to carry on the routine laboratory procedures.

There is no doubt that the elevation of the laboratory technician to the status of a respected and useful calling will be a great help to the medical profession, to the patient, and to the scientific practice of medicine.

The headquarters of the Registry of Technicians of the American Society of Clinical Pathologists are located in the Metropolitan Building of Denver, Colorado.

Another very desirable feature of the Registry is the facilities it offers in finding suitable placement for registrants and in aiding physicians to find desirable applicants.

MORE LIGHT ON LICENSING UNNATURALIZED PHYSICIANS

I have just received a copy of *The Nebraska State Medical Journal* in which I find an article intended for my attention relating to the rules and regulations of the Department of Public Welfare in relation to the licensing of physicians to practice medicine in Nebraska.

I fully agree with the sentiment expressed in this article. However, the article itself is founded on false premises. The matter to which you refer is not a rule of the Department of Public Welfare but it is embodied in the laws of the state.

You state in the article also: "It seems not only unfortunate but unjust to have such a rule in the Department of Welfare, but it is there. Under existing laws a foreigner who comes to this country and applies for naturalization may vote at local and state elections and is accepted in practically all respect as one of us in social, civic and commercial matters; should the Department of Public Welfare impose such restriction on medical men! Why this injustice?"

In this statement you are wrong. The laws of the state formerly provided that a person who had declared his intention to become a citizen could exercise the right of franchise. That law was repealed, however, I think in 1921, but I am not certain. It was immediately following the war at any rate. At the present time no person can vote unless he is either a citizen by birth or a naturalized citizen. Whether the act of the legislature in passing this law was sound or not is neither here nor there. It is the law nevertheless at the present time.

Under Chapter 167 of the Session Laws of the last legislature, Subdivision 2, Section 3 provides among other things that no person shall be licensed to practice a profession under this article until he shall have furnished satisfactory evidence to the Department that he has attained the age of 21 years, is of good moral character, and a citizen of the United States. There are nine or ten other sections dealing with the requirements that an applicant must meet before he can secure a license to practice any of the healing arts. Section 3, however, is explicit.

The Legislature has taken from the Department all discretion so far as granting licenses to people who are not citizens of the United States.

It is just two months since I have taken over the duties as Secretary of the Department of Public Welfare. This particular matter did not come to my attention until the time had passed for the introduction of bills in the Legislature. The matter appeared to me to be so grossly unfair that I went to the trouble of going through the files of bills before the Legislature to ascertain whether it might be possible to use some of these bills as a basis for amending the act passed two years ago so that foreigners who had taken out their first papers might be permitted to practice medicine providing, of course, they were otherwise qualified. I found that this was impossible. Consequently there is no way it can be dealt with by the present Legislature.

I took the matter up with the Attorney General and with a member of the Senate Committee having jurisdiction over these matters. We all agreed that such a law should be passed but for the reason stated above it was decided that nothing could be done at this time.

We are in entire accord with the sentiment expressed in this article so far as it relates to the injustice imposed upon people of foreign birth who have renounced their allegiance to their own country and intend to become citizens of the United States. As indicated before, any criticism that is to be made against this condition should not be against the Department of Public Welfare but against the Legislature that enacted the law. It is not within our province to change the law. We must execute the law as we find it. In this particular instance our hands are tied and they can only be untied by an act of the Legislature.

—Ernest M. Pollard,
Secretary Department of Public Welfare.

EDITORIAL PARAGRAPHS

The free pass bill for doctors and lawyers was vetoed by the governor as it deserved to be.

The Seiler Surgical Co., Omaha, has moved into the Medical Arts Building.

The annual meeting of the American College of Physicians will be held at Boston, April 18 to 12.

It is stated that nine carloads of Christmas seals were sold last year, and that $5,800,000 was realized.

Narcosan, as a remedy for drug addiction, has been discredited after studies made at the Bellevue hospital, New York.

The Physicians' Fellowship Club, a strong and influential body in Chicago, is strongly objecting against the establishment of a free dispensary at St. Elizabeth hospital.

Abramowitz, in *N. Y. Med. J.*, commends the action of thallium internally and locally in tinea capitis. Eight mg per kg of body weight is the proper dose. Only one dose is given.

It is reported by Ambruster that a house in New York City reconditions musty, buggy or webby ergot so it passes inspection of government officials and can be foisted on to the manufacturing pharmacists.

It appears from the *Journal of the South Carolina Medical Association* that one Mary Jane Ross by Will made the South Carolina State Medical Association legatee to one-half of her estate valued at over $1,200,000.

In the Milbank Health Demonstration the Cattaraugus County (N. Y.) Medical Society sees a great danger as it fosters paternalism and pauperization and that the attempt to guide official health work results in inefficiency and chaos.

Business in the town of Bloomfield, Nebr., has been on a cash basis for a whole year now, including medical and dental service, and reports are that it is working out successfully to all concerned.

Woodward's "Meet General Grant" is an appealing volume of recently published biography, which, while not concealing his weaknesses, brings out with added force his superior characteristics as a man and his superb generalship in the Great Crisis.

Tularemia was first discovered in Tulare county, Calif., in a ground squirrel, in 1910, by Dr. G. W. McCoy of the U. S. Public Health Service. It is now prevalent in all except the New England states. Infection resulting after dressing rabbits is most likely tularemia.

All dealers in medical supplies and equipment who wish to exhibit at the annual meeting of the Nebraska State Medical Association, which will be held in Omaha, May 14th, 15th and 16th, should communicate with Dr. A. F. Tyler, 1216 Medical Arts Bldg., Omaha, Nebr.

In spite of the pronounced service of insulin in conserving the lives of numerous diabetics the mortality rate of this disease has been steadily rising says *American Medicine*. The increase seems to be due to a greater mortality above the fifth decade in females and above the sixth decade in males.

The case against the tonsils as the cause of rheumatic fever is not fully proven and the routine removal of the tonsils in children for prevention of heart disease is not based on conclusive data, says an editorial writer in *Wisconsin Medical Journal,* analysing the work of the best authorities. But think of the revenue!

There is thought to be good reason for hoping that under President Hoover there may be created a Department of Education and Health. The selection of president of Leland Stanford university and former president of the A. M. A., Dr. Ray Lyman Wilbur, as Secretary of the Interior, is thought to forecast this.

From an experience of many years with the so-called spasmodic croup the writer developed the idea that a brisk calomel purge (½ gr. for child) given the first morning will abort the attack and prevent its recurrence the second and third nights as is the natural course of the disease. Syr. Scillae Comp. is the remedy *par excellence* for relief.

The New York Academy of Medicine is making arrangements for a second series of lectures at the academy, coordinated clinics, clinical demonstrations and courses in hospitals and teaching institutions of New York, on the subject of "Functional and Nervous Problems in Medicine and Surgery." The Fortnight will be held during the period October 7th to 19th, 1929.

Early in April, a year ago, a patient was given a dose of adrenalin by the hypodermic method for the relief of an asthmatic attack. No other remedial measure given since that time has afforded the least relief. During the year he has been given over one hundred forty ounces of adrenalin. The key to the matter is, apparently, suprarenal deficiency.

If you have not paid your dues for 1929 you are delinquent and not entitled to any more numbers of *The Nebraska State Medical Journal* and if any more numbers are sent to you it is through courtesy. If you have not paid your dues you are not entitled to the benefits of medical defense if a malpractice suit is filed against you today, or tomorrow. Mail your check for dues immediately.

A valued medical correspondent delivers himself as follows: "The time was when an internist was an internist, an oculist an oculist and a surgeon a surgeon, but that has decidely changed. At the present time an internist is an internist first and anything else he can get to do at other times. Likewise, our surgeons are caring for everything about the head; doing mastoids, tonsils, sinuses, etc. Only those things that it is impossible for them to do do they allow to escape their grasp. Only recently one of our best known internists almost ruined an eye attempting to remove a foreign body. The scar caused, as a result of his manipulation, will forever dim the vision of the patient."

The Chadron Hospital, a 25 bed institution, two full stories and a basement, fireproof, electric elevator, two operating rooms, maternity room, kitchen and nurses' quarters, is the result of a city bond issue of $35,000. A petition signed by five hundred names was presented to the city council, the election called, and the bonds voted by a 3 to 1 vote. The attorney general, in passing on the bonds, said it was his opinion the people could do anything they wished with their money. Welfare organizations furnished the hospital. Any practitioner licensed in Nebraska is admitted to the privileges of the hospital. The institution has been self supporting from the opening about six months ago. Chadron has a population of five thousand.

HONORING DR. A. R. MITCHELL

On the evening of March 5th, 1929, the Lancaster County Medical Society gave a complimentary dinner to Dr. A. R. Mitchell of Lincoln, upon the completion of fifty years in the practice of medicine and surgery in the City of Lincoln. Dr. Roscoe L. Smith, president of the Lancaster Medical Society, presided at the dinner and Dr. H. H. Everett acted as toastmaster.

In addition to Dr. Mitchell, the honor guest, the society had the pleasure of entertaining a number of Dr. Mitchell's older friends in the profession, especially from Omaha. Dr. H. Gifford, Dr. John E. Summers, Dr. A. B. Somers, were present and responded to toasts. Dr. J. M. Mayhew, Dr. S. E. Cook, Dr. H. J. Lehnhoff and Dr. B. F. Bailey were also speakers for the occasion.

Dr. Cook presented Dr. Mitchell with a handsome traveling bag, which, however, Dr. Mitchell assured the company he had no intention of using for another departure from Lincoln. Dr. Lehnhoff read about twenty telegrams from various parts of the country. Telegrams were received from officers, employes and associated trustees of the American Medical Association, all highly congratulatory and complimentary upon Dr. Mitchell's services, and bearing the esteem in which he is held by his associates in the conduct of the American Medical Association.

In his response to the other speakers, Dr. Mitchell outlined the conditions, professional and otherwise, under which he came to Lincoln in 1879, and related at times in a very graphic manner, the changes that had taken place both in practice and in the surroundings in the time that has passed.

Dr. Mitchell was one of the founders of the Lincoln Medical Society, the predecessor of the Lancaster County Society. With him, as a guest of the dinner also, was Mr. F. H. Burnham, formerly president of the First National Bank of Lincoln. Mr. Burnham also participated in the organization of the County Medical Society, having been present on that occasion to contribute musical numbers to the program. Mr. Burnham in his remarks also called attention to many interesting changes that had taken place in civic and professional life in Lincoln during that period.

About one hundred and twenty guests attended the dinner in honor of Dr. Mitchell, and it was quite evident that they shared with the speakers the enthusiasm for Dr. Mitchell's participation in the development of professional and civic matters during his fifty years service in this community.

The writer of these lines feels that too often younger men fail to realize or to appreciate their indebtedness to those who have laid the foundation and created the favorable conditions under which we are able to work today. In just this manner, Dr. Mitchell has had an active and important part both in Lincoln and in Nebraska.

In further celebration of Dr. Mitchell's fiftieth anniversary or his Golden Jubilee, the Sisters of St. Francis and St. Elizabeth's Hospital, entertained the members of the Medical Staff of the local hospitals at a dinner on Tuesday evening, March 12th. Dr. E. B. Finney of Lincoln, acted as Toastmaster and about seventy physicians, members of the staff of St. Elizabeth's Hospital and other Lincoln hospitals attended as guests.

Dr Morris Fishbein, editor of the Journal of the American Medical Association, attended and gave the principal address. Dr. Fishbein, if possible, spoke even more brilliantly than usual. He made a comparison of the method of practice of fifty years ago and the present time and dealt at some length upon the possibilities and prospects for medical practice for the future.

Dr. Fishbein is far from being blind to the mistakes of medicine in the past or to its shortcomings at the present, however, he is optomistic for the future of medicine, and suggested some of the ways in which we can do better by our patients at the present time and plan for better work for them in the future.

Dr. Fishbein was introduced by Dr. H. J. Lehnhoff, who introduced the principal speaker in a very able manner. Dr. E. G. Zimmerer spoke on behalf of the Sisters at the hospital and the alumni of the training school. He presented Dr. Mitchell with a beautifully embroidered pillow with a boquet of roses and with a handsomely engraved certificate in recognition of his services to the hospital and to the community during the past fifty years.

In response to calls on the part of the toastmaster, Dr. B. F. Bailey spoke for the Bailey Sanitorium; Dr. E. W. Rowe spoke for the Bryan Hospital and Dr. H. W. Orr spoke for the Lincoln General Hospital. Each of these extended in his best manner the good wishes and felicitations of the profession and the staff of the different hospitals to Dr. Mitchell upon the completion of his many years of successful work and efficient service for the community and for the profession.

Dr. Mitchell, in responding to the various toasts, reviewed the work of St. Elizabeth's Hospital and his experiences in hospital and other professional work. He described the difficulties of early surgical work for the local railroad and the conditions under which operations had to be done. He gave eloquent tribute to the little band of Sisters who launched the first hospital project in Lincoln in 1889 and told of the difficulties and hardships under which the hospital work had to be inaugurated and carried on in the beginning.

In closing his remarks, Dr. Mitchell introduced Sister Magdalena who was the one who came to Lincoln to start the hospital in the beginning, and Sister Hedwig who was the Sister Superior.

Vocal selections and other contributions to the entertainment of the guests were given by nurses in the training school of the St. Elizabeth's Hospital. Telegrams were received from a number of other Sisters in other hospitals in different parts of the country, who had at one time been connected with the hospital in Lincoln.

Taken all in all, the splendid dinner, the fine entertainment, and the brilliant address by Dr. Fishbein constituted an evening of tribute to Dr. Mitchell of which any physician or any citizen might well be proud and which undoubtedly Dr. Mitchell, as any one might, receive great satisfaction after his years of labor in behalf of the community and the profession.

—H. W. Orr.

POSTGRADUATE WORK IN PEDIATRICS

The University of Nebraska College of Medicine will offer a week's postgraduate course in Pediatrics and Obstetrics, from May 6th to May 13th, inclusive, 1929. This will be the week preceding the annual meeting of the Nebraska State Medical Association, and plans can be made to continue in attendance at the meeting May 14th, 15th and 16th. The course will be limited to twenty-five, and all registrations must be made by April 10th.

The work in Pediatrics will include nutrition, feeding of normal and abnormal babies, contagious diseases, and diseases of the newborn. The difference in diagnosis between adults and children will be given consideration. Clinical demonstration of cases in the wards and the dispensary will constitute a considerable part of the work. The College library and the laboratories will be available for intensive study of these cases.

The work in Obstetrics will include discussion of sterility, antepartum care, diagnosis of abnormal position and methods used to correct, abortion, antepartum complications, the toxemias of pregnancy, the hemorrhage, eclampsia, use of forceps, version, Caesarian, cases in hospital and dispensary.

Any special subject in obstetrics or pediatrics in which the matriculants are interested will receive attention, and the library and laboratories will be available. Work will begin promptly at 8 a. m. each morning. Matriculation and tuition fee—ten dollars. Unless at least ten register by April 10th the course will not be offered.

Yours very truly,

R. W. Bless, M. D., Chairman,
W. H. Taylor, M. D.,
C. R. Kennedy, M. D.,
Committee on Post-Graduate Courses.

TO THE MEDICAL PROFESSION OF NEBRASKA

I am engaged upon the preparation of a history of the work of the Nebraska Orthopedic Hospital for the twenty-five years that I have been connected with the institution (1905-1930). In that connection I should like to locate any patients who may now be residing in your community and who have been patients at any time in the Orthopedic Hospital.

If you know of any such will you kindly give me their names and addresses. I should like to have, if possible, both the name under which they were in the hospital and the name at the present time if that has been changed.

Your cooperation in the matter will be very greatly appreciated.

Very truly yours,

H. Winnett Orr, M. D.,
Chief Surgeon, Nebraska Orthopedic Hospital,
1023 Sharp Building, Lincoln, Nebraska.

AMERICAN COLLEGE OF PHYSICIANS' THIRTEENTH ANNUAL CLINICAL SESSION, BOSTON, APRIL 8-12, 1929

The American College of Physicians will hold its Thirteenth Annual Clinical Session in Boston, April 8-12. Dr. Charles F. Martin, Dean of the Faculty of Medicine, McGill University, is President of the College this year, and Dr. John H. Musser, Professor of Medicine at Tulane University Medical School is president-elect and will be inducted to the presidency toward the end of the Boston meeting. Dr. James H. Means, Jackson Professor of Clinical Medicine at Harvard Medical School and Chief of the Medical Service at the Massachusetts General Hospital is General Chairman of all Boston Committees having charge of arrangements for the Clinical Session of the College in April.

The Program provides hospital visits, clinics, demonstrations and ward-walks during the forenoons at fifteen different Boston hospitals, and for general scientific sessions each afternoon and evening in the Assembly Room of the Hotel Statler, which will be headquarters. Eminent authorities in their special lines will present the results of their work before an audience competent to appreciate the value of the contributions.

A Symposium on Deficiencies will take place the first evening of the Session, and will be of particular interest because of the fact that deficiencies are nowadays assuming a far more wide-spread and important role than had heretofore been anticipated. They have come into their own as factors producing acute and chronic disease on a par perhaps with infections. The Committee has secured for the Program men who can speak with authority on a variety of aspects of this important subject.

Another special feature is a review of the Present

Status of Vaccine and Serum Prophylaxis and Therapy, designed to give the Internist a rapid survey of the field. The speaker, Dr. Benjamin White, of Boston, is an authority on these subjects and can give the high spots in rapid and yet forceful fashion.

The annual banquet of the college will be held Thursday evening, April 11, when Dr. George E. Vincent, president of the Rockefeller Foundation, will deliver the chief address. The Convocation, for the conferring of Fellowship, will take place Friday evening, April 12. Dr. Charles F. Martin, of Montreal, will deliver the Presidential Address.

Dr. Adolph Sachs, Omaha, is Governor for Nebraska.

Programs and details concerning reduced fares; admission, etc., may be secured from the Executive Secretary, E. R. Loveland, 133-135 S. 36th Street, Philadelphia, Pa.

AUXILIARY NOTES

Otoe county organized at Nebraska City and Cuming county at West Point recently. Officers' names not available. Including these, the roster is as follows:

Rock and Holt counties, Mrs. F. L. Wilson, president, Stuart; Lancaster county, Mrs. B. F. Bailey, president, Lincoln; Omaha-Douglas county, Mrs. B. B. Davis, president, Omaha; Lincoln county, Mrs. H. H. Walker, president, North Platte; Madison-Stanton-Antelope-Pierce-Knox Counties, Mrs. R. A. Frary, president, Stanton; Dodge county, Mrs. Andrew Harvey, president, Fremont. The Omaha-Douglas County Auxiliary recently gave a Benefit tea, the proceeds of which was given to the Douglas county hospital chairman, Mrs. Frank Conlin, to be used toward furnishing a reading room or solarium in the new County Hospital. The Auxiliary will keep this room permanently equipped.

The Doctor's Wives' club, Omaha, of fifty members had County Hospital Day, March 11, and donated supplies to the Douglas County Hospital committee of the Auxiliary.

The Woman's Auxiliary of Douglas county gave a Benefit at the Brandies Theatre, March 11, the proceeds of which were given to the Public School Nutrition Fund of the Auxiliary. Mrs. Millard Langfelt is doing wonderful work in nutrition in the Omaha public schools.

All doctor's wives, not already members, are eligible to membership in the Auxiliary and are invited to the annual meeting in Omaha May 14, 15, 16, and to become members. An excellent program has been arranged and a large attendance is confidently anticipated.

—Mrs. Frank Conlin

PUBLIC HEALTH

Spring brings two important health measures to Nebraska homes and communities, namely: "The Round-up of the Children" and "May Day—Child Health Day".

The first is an all important community habit, the national health project of the P. T. A. Every child who goes to school for the first time in September needs to have a stripped thorough physical examination in early spring. Parents will then hasten to have defects corrected and the child made fit for the great adventure of school.

Communities having health activities and definite programs will rejoice on May Day, using it as a culmination of all measures for better Home and Community health. Let May Day be a joyous Day for young and old. Let us quote from the American Child Health Association on the origin of May Day and its purpose.

The Purpose of May Day

1. Preparedness for parenthood: Motherhood, fatherhood, pre-natal care.

2. A wholesome home environment: Physical, cultural.

3. Sound nutrition.

4. Physical examination, correction of defects, protection against disease.

5. Training in health habits and knowledge: In the home, in the school.

6. Mental and emotional soundness: Through inheritance, through environment.

7. Spiritual encouragement: Through the home, through the church.

—Louise M. Murphy, R. N., Dir. Child Hygiene.

SIC SEMPER

Dear Editor:

From comments upon the editorial page of The Nebraska State Medical Journal, page 92, February, 1929, also page 316 of the A. M. A. Journal, January 26, 1929, the editors of our medical press appear to have fairly thoroughly convinced themselves, the use of vaccine is for advertising propaganda and financial assistance to the manufacturers.

From these two editorials I must consider that my patients who have come for a number of years and have insisted that vaccine therapy has kept them from contracting the various coryza or influenza infections that have been prevalent in our land, do not know of what they are speaking. Statements such as these from editorial writers are very apt to mislead some, especially of the younger group, of practitioners into a very faulty position. The practice of medicine has not as yet reached a perfect scientific state. Therefore, vaccines being a part of the practice of medicine appear to not be without some fault. The color that makes one lady's eye lashes so beautiful may be poison to another. While one may insist that orris root is a wonderful dry shampoo it has been our privilege to see numerous patients positively poisoned by its use. We have not yet seen anybody poisoned from the use of vaccines and we have positively seen both preventative and curative results by their use. We must consider them similar to many other things and useful to a large number of people.

—D. D. Sanderson.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations:

Physician, $3,800 a year.

Associate Physician, $3,200 a year.

Applications for the above-named positions must be on file with the Civil Service Commission at Washington, D. C., not later than June 29.

The examinations are to fill vacancies in hospitals of the Veterans' Bureau for duty throughout the United States.

The entrance salaries are as indicated above. Higher-salaried positions are filled through promotion.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience.

On account of the needs of the service, papers will be rated as received and certification made as the needs of the service require.

Full information may be obtained from the United

States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

A DOCTOR'S PRAYER

Dr. Thomas Burr of Maine found the following prayer-poem written on the fly-leaf of an old medical book which he purchased in Boston. It was evidently written by some former owner of the book, dated 1740.

> "O God, to Thee I make this prayer,
> And from an humble heart I pray:
> Guide with thy wondrous love and care
> My hand in this its work today.
> Grant me the light to see and do
> That which is wisest and is best;
> Grant that thy spirit may imbue
> My tasks with blessings manifest.
> Not for myself, Oh Lord, I pray
> These blessings, if it be thy will,
> But for the one who trusts today
> The guidance of my skill."

THE SOCIETIES

The **Lancaster County Medical Society** entertained 20 members of the Omaha-Douglas County Medical society at a dinner at the University club, Lincoln, February 19. Following the dinner the visiting members presented a program at the rooms of the Lancaster county society. Papers were presented by Drs. Edwin Davis, G. Alexander Young, and John B. Potts.

The **Gage County Medical Society** met February 12, following a dinner. The meeting was well attended and the program was given by Dr. Sanford Gifford, Omaha, subject, "Salicylate Therapy"; and Dr. W. A. Cassidy, Omaha, subject, "A Typical Mastoiditis." County Superintendent Joseph Miller talked on health inspection of 2,000 school children.

The **Otoe County Medical Society** at a meeting following a dinner at the Frontier hotel, February 11, had a most interesting and instructive session. The program follows:

Dr. J. Jay Keegan, dean of the University of Nebraska Medical College, and Dr. G. Alexander Young of Omaha, specialist, gave instructive talks on "The Diagnostic and Therapeutic Uses of Spinal Lipoidol and Air Injections," which were illustrated by lantern slides.

These addresses were given the closest attention by the members present.

Dr. C. A. Roeder, Omaha, spoke on "Report on Series of Goiter Operations," and his remarks were instructive and well received by the members.

Notwithstanding the road conditions over Otoe county at present a number of members living at a distance attended the meeting.

The **Madison Five Counties Medical Society** held its first scientific session of the year at the Hotel Norfolk following a dinner attended by 35 persons. The program was put on by the staff of the Norfolk State Hospital as follows: Manic Depressive Psychosis, Dr. E. L. Emerick; Mental Hygiene, Dr. E. C. Drummond; Early Diagnosis of General Paralysis of the Insane," Dr. G. E. Charlton.

This is the third largest society in the state, the Omaha-Douglas and the Lancaster county societies occupying first and second places respectively.

The **Clay County Medical Society** at its regular meeting at Edgar elected Dr. C. W. Keith, president; vice president, Dr. C. W. Latta; delegate, Dr. W. M. Thomas. A feature of the meeting was the dinner at the Cook Cafe with the compliments of Dr. Keith.

HUMAN INTEREST TALES

Dr. Fred. Barta has located at DeWitt.

Dr. Charles Nutzman has located at Harvard.

Dr. M. B. Wilcox, Hastings, is locating at Holdrege.

Dr. E. E. Miller has left Scotia and has located at Culbertson.

The village of Panama, Nebr., is reported without a physician.

Dr. Chas. H. Breuer, retired Lincoln physician, is on a trip to China.

Dr. and Mrs. B. B. Davis, Omaha, are on a trip to Gulf points and Cuba.

Dr. J. F. Brendel, Murray, has been appointed county health adviser.

Dr. J. F. Schramek and Miss Emma Chaloupka, Wilber, were married February 23.

Dr. Sherman Jones, Hastings, has gone abroad for an extended period of study.

Dr. and Mrs. J. W. Miller, Gibbon, visited in California during the late winter.

Dr. H. C. Cameron and wife, Johnstown, have returned from a trip to Canada.

Dr. Roland Reed, McCook, recently spoke before the local Rotary on medical ethics.

Dr. M. L. Wilson, Falls City, has been appointed county physician of Richardson county.

Dr. H. Gifford, Omaha, was elected president of the Nebraska Public Ownership League.

Dr. Charles Edward Thompson, Omaha, has taken an interneship at the Ford hospital, Detroit.

Dr. Harry Larson of Omaha has located at Tilden in association with Drs. Barr and Allerton.

Dr. D. D. Sanderson, Lincoln, is sojourning at Miami, the land of sunshine—and moonshine.

Dr. and Mrs. J. A. Waggener, Humboldt, celebrated their fifty-first wedding anniversary recently.

The home of Dr. J. F. Kaspar, Prague, was gutted by fire recently, entailing a loss of about $6,000.

Dr. John Peterson, formerly of Geneva, has located at Red Cloud in succession to Dr. E. A. Creighton.

Dr. C. C. Paxton, for five years at Palmer, has moved to Idaho and will retire from active practice.

Dr. H. E. Glatfelder, Central City, recently spoke before the local Chamber of Commerce on Advertising.

Dr. C. Paxton has leased the Palmer hospital to Dr. E. A. Rells, Brainerd, and Dr. C. Pelican of Omaha.

Dr. E. E. Miller, Scotia, has sold his interests to Dr. C. E. Pinckney of North Loup who will locate at Scotia.

It is understood that Dr. E. A. Creighton, Red Cloud, has retired from active practice on account of his health.

Dr. E. R. Hays, Falls City, spoke before the Tecumseh chamber of commerce on Disease Prevention early in March.

Dr. R. C. Byers, Fremont, collided with a truck with the result that his car—not the doctor—was taken to a hospital.

Dr. Walter Judd, who has been in the missionary service in China, recently spoke at Rising City and other Nebraska points.

Dr. Anna Louise Strong, native of Friend, Nebr., resident of Seattle, just returned from some years spent in Russia, spoke in Omaha recently.

Dr. Sallie F. Kennedy, who about 1900 was a practitioner at Randolph but who more recently has been in practice in Alaska, visited in north Nebraska in February.

Dr. A. G. Fletcher, superintendent of the Presbyterian hospital at Tioku, Korea, is visiting in this state and has lectured at several places. He is a brother of the Drs. Fletcher at Orchard.

Drs. Salter and Brush, Norfolk, suffered a loss estimated above a thousand dollars in a fire that gutted a building into a part of which they had just moved their physiotherapy apparatus and which was to be an addition to their present offices.

The Woman's Auxiliary of the Omaha-Douglas County Medical society gave a benefit social, the proceeds to go toward wurnishing a room in the new Douglas county hospital. One hundred and sixty guests were present.

The many Nebraska friends of Dr. W. B. Kern, Los Angeles, former superintendent of the Hastings State Hospital, will be glad to know that he has resumed practice in nervous and mental diseases after an enforced vacation of several years due to illness.

Dr. and Mrs. W. H. Heine, Fremont, returned recently from Europe after an absence of ten months. They spent nine months in Vienna where the doctor attended the Eye, Ear, Nose and Throat clinics. During the Easter vacation they spent two weeks in Italy visiting Venice, Florence, Rome, Naples and Palermo, Sicily. On the homeward trip they visited Nurnberg, Rotenberg, Mainz-on-the-Rhine, Cologne, Amsterdam, Brussels and London.

NECROLOGY

Henry A. Reichenbach, Casper, Wyo.; Nebraska University College of Medicine, 1901; practitioner at Pender, Nebr., for several years after graduation, later for 15 years at Council Bluffs and for the last 9 years at Casper; died of pneumonia, February 18, 1929, aged fifty-three years.

Louis A. Dermody, Omaha; Creighton Medical College, 1910; practitioner in Omaha since graduation, died March 21, 1929, following an illness of three days, aged about forty-two years.

TREATMENT OF LOBAR PNEUMONIA WITH CONCENTRATED ANTI-PNEUMOCOCCUS SERUM

During the past two years Russell L. Cecil and W. D. Sutliff, New York (*Journal A. M. A.*, Dec. 29, 1928), have studied the specific treatment of lobar pneumonia both clinically and experimentally with especial reference to investigation of the immunologic properties and the therapeutic value of concentrated antipneumococcus serum. They conclude that refined antipneumococcus serum is a purified and concentrated derivative of ordinary antipneumococcus horse serum. It is usually prepared in a polyvalent form, containing immune bodies against pneumococcus types I, II and III. Its potency against type I and type II is quite high. Its potency against type III is insignificant. Concentrated serum, when injected intravenously into monkeys infected with lethal doses of pneumococcus type I, promptly sterilizes the blood and causes a rapid resolution of the pneumonic exudate. When concentrated serum is injected intravenously into patients in the early stages of pneumococcus type I pneumonia, a striking clinical effect is usually obtained. The bacteria disappear from the blood and the temperature falls rapidly to normal. Even in late cases, good results are often obtained. In type II pneumonia the clinical results are not so impressive, though here again in patients treated early, favorable results are often noted. In type III pneumonia, no clinical effect has been observed. In type IV pneumonia the beneficial effect of serum is questionable. In 441 cases of lobar pneumonia treated with refined polyvalent serum, the death rate was 30 per cent. In a control series of 444 cases, the death rate was 39.2 per cent. In respect to the death rate, the refined serum produced its most striking effect in pneumococcus type I pneumonia. In a series of 153 treated type I cases the death rate was 20.9 per cent, while a control series of 147 untreated type I cases showed a death rate of 32.6 per cent. A definite but less marked effect on the death rate was observed in cases of pneumococcus type II pneumonia that were treated with concentrated serum. The serum had no favorable effect on the death rate in pneumococcus type III pneumonia. In type IV pneumonia the death rate was lower in the treated than in the untreated series, but factors other than serum may have been responsible for this difference.

INCOMPLETE REMOVAL OF TONSILS BY ELECTRODESICCATION

The procedure known as electrodesiccation of the tonsils was carried out by one skilled in the technic. A piece of diseased tonsil was covered over by a fairly thick, smooth, white scar. The appearance of the throat some months later was such as to warrant a laryngologist in saying that there had been a complete removal of the tonsil. It may be said that portions of diseased tonsil are frequently left following surgical tonsillectomy. That is true, but it is only by electrodesiccation that such fragments can be so completely hidden from view. In spite of the improvement which has been made in the technic of destruction of the faucial tonsil by high frequency current, Frank J. Novak, Jr. and Michael Zeller, Jr., Chicago (*Journal A. M. A.*, Dec. 29, 1928), do not see any evidence of sufficient validity to change their opinion that the method is inadequate and unsatisfactory, and that it cannot in any manner compete with the accepted present-day methods of surgical tonsillectomy.

GOOD FOR WHAT AILED HIM

"I am never well—can't say why," said the patient. "I get a sort of pain, I don't know exactly where, and it leaves me in a kind of—O I don't know."

"This is a prescription for I don't know what," said the doctor. "Take it I don't know how many times a day for I can't think how long, and you'll feel better, I don't know when.—*J. Tennessee M. A.*

ANNUAL MEETING, OMAHA, ELKS CLUB, MAY 14, 15, 16

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MEDICAL CLINIC*

JAMES B. HERRICK,

Professor of Medicine, Rush Medical College,
Chicago, Illinois.

I am sure you realize that I labor under a disadvantage in trying to give a clinic on patients I have never seen before or whom I have had the opportunity of seeing for merely a few minutes. You will also realize that it is impossible to do more than touch a few high spots. If I go over these cases in a superficial way—which I would not dare to do before a class of students—you will understand it is because I know you will be gracious and forgive. I fear also that what I shall try to bring out will be old to nearly all of you. Yet, as I said this morning, re-discussion is not such a bad thing, after all.

I will show you four patients. I am indebted to Drs. Dunn and Thompson for the privilege of showing these patients, for their histories and the lantern slides.

Patient No. 1: This patient is a negro, male, forty years old, a foundry worker. Since the first of this year he has noticed a shortness of breath. It is not marked. He is able to lie down at night. He has a cough, but no pain. His abdomen is prominent, for he has ascites.

Let me state right now, this is a hard case if we depend much on the history, which is largely negative. In trying to make a diagnosis the history usually amounts to fifty per cent of the diagnosis. So far as our history is concerned, then, we are left a good deal in doubt as to what we are dealing with though the dyspnea and ascites hint at an incompetent heart. But the moment we come to examine this patient physically, we see two or three significant things. The veins in his neck are prominent, and the arteries are pulsating with a quick movement and quickly receding. He has the typical water-hammer pulse. The heart can be felt nearly to the anterior axillary line. The impulse is diffuse but rather forcible. Jumping to a conclusion we judge there is something the matter with his heart; presumably we have an aortic leak.

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*Clinic given before the Missouri Valley Medical Association, October 31, 1929.

When we listen to his chest we find the typical double murmur so characteristic of an aortic lesion. At the apex is a murmur which I should say is the Flint murmur. Here is an aortic lesion in a comparatively young man who has never had rheumatism, and whose arteries are not sclerotic. Naturally, we think of the possibility of a luetic infection. When I ask the direct question, "When did you have a chancre?" the answer is: "At eighteen"—a frank admission of an initial lues at eighteen. A positive Wassermann test of the blood confirms the diagnosis.

Why is luetic aortitis not recognized oftener and in its earlier stage?

This case will enable us to understand one reason. It is because there are often no symptoms that lead the patient to go to a doctor. I tried to get this man to admit that ten or fifteen years ago he had some distress in his chest that should have led him to go to a doctor. He does not remember anything of that sort. When, therefore, such a patient comes to us with a fully developed aortic leak on a syphilitic basis or with an aneurysm, we must not be too quick to say that some careless or ignorant doctor overlooked this serious condition in the earlier stages. Very often the patient never went to any doctor. Or the patient may go to the doctor with symptoms due to a luetic involvement, but these symptoms may be slight and easily misunderstood—just a trifling uneasiness in the sternal region—a little ache. Possibly the doctor hears a faint murmur that he may think is accidental. He may examine with the x-ray or the electrocardiograph, but the symptoms and signs really due to syphilitic involvement of the aorta may be so very slight as to be overlooked even by the careful physician.

But in other patients, sometimes early, oftener late, the pain is frankly a distress in the sternal region—it is like a mild angina. The doctor hears a systolic blow at the base or a faint diastolic blow. He says, "Here's a young man who has never had rheumatism, whose vessels are not sclerotic, who has substernal pain with a murmur over the aorta. Very likely this means specific trouble."

He is liable to hear what is worth a great deal in the diagnosis of aortic syphilis, and that is a sharp clang of the aortic valves as they close. The sound has a bell-like, echoing quality. Many writers emphasize this—I think justly—as one of the most striking features of luetic aortitis. I do not know why the syphilitic aorta gives that sound so frequently when the aortic valves close, but it often does. To repeat—with these symptoms and findings in a patient who has never had rheumatism and is comparatively young, whose vessels are not sclerotic, we should suspect syphilis. At times we must suspect it in spite of a negative history of chancre. Nor does a negative Wassermann on the blood exclude syphilis. Even a negative Wassermann on the spinal fluid does not always exclude, though, as you know, you may get a negative blood Wassermann but a positive spinal fluid. And remember, also, that luetic aortitis may be combined with disease of the nervous system; general paresis and tabes are not infrequently associated with it.

Patient No. 2: This is a man of fifty-six. Four years ago his heart began to beat fast. No pain in the chest. Not very short-winded, but does not climb stairs. He said the doctor told him not to. Never had rheumatic fever. Has had pain in the joints for a short time.

This man has the same findings that the other patient exhibited. The murmurs are louder and the diastolic more prolonged. The pulse pressure in both cases is high. He has had several heart attacks in which his heart would suddenly start to beat fast. No pain. A Wassermann of 4 plus. Admission of an initial lesion. It is a duplicate of the other case. In addition he has a paralyzed arm. Some of you may guess he has had some syphilitic vascular cerebral accident, but it was a fracture of the skull that resulted in the paralysis of his arm—the auto rather than syphilis. We must not lay everything that is wrong with a patient to the one outstanding disease from which he suffers. A man may have two conditions absolutely unrelated. The paralysis is clearly traumatic, not in any way associated with the old luetic trouble.

I want to say one word with regard to treatment and about the importance of recognizing this disease if possible in its early stage. Syphilis is prone to attack not only the nervous system but the first part of the aorta. The pathologists tell us we must not limit the lesion to the first portion of the aorta; that if we look carefully we shall find the transverse and descending portions of the aorta are also involved. Clinicians, however, emphasize the importance of the first inch or two of the aorta. Why? Because, in the first place, it is close to the aortic valves. Even if they are not involved at the same time as the aorta itself, the syphilitic process may extend to them, deform them and cause them to leak with the serious mechanical consequences. In the second place, it is this portion that receives the full impulse of the blood from the left ventricle. If it is diseased and weak, it will yield more readily than some portions lower down, may dilate and become truly aneurysmal. There is a third reason why it is an important portion. The coronary arteries open from the aorta just above the aortic cusps. If the syphilitic process happens to narrow or occlude the opening into the coronary, disturbing or even fatal results may follow: we may have the symptoms that go with angina or acute or chronic obstruction. We are justified then, in considering this first part of the aorta as a portion of great importance clinically. It is this portion that we examine with particular care in trying to make out the disease aortitis. We examine it in the way I have already discussed but in addition by percussion to see if we can make out an increase in size. There is a great difference among physicians in their ability to map out an aorta by percussion. One man says he can do it to the minute fraction of an inch. Others are not so sure. We should on palpation try to make out an enlargement of the aorta, palpating in the suprasternal notch.

Then we have the x-ray to help us. The French schools are experts in this line. They are willing to go on record as detecting certain very minute changes in the width of its contour as pathologic and indicating a syphilitic aortitis.

There are physicians who say it is impossible to diagnose syphilitic aortitis without an accompanying leak. I think this is often true, yet I believe it is possible at times to diagnose it with a reasonable degree of certainty without the leaky valve. Remember the ringing second tone and the pain symptoms of an anginal character. There may be a little bit of fever and malaise. Finally we get our history of syphilis with positive Wassermann and so have a reasonably conclusive proof of syphilitic aortitis.

This disease is not often clinically recognizable very early in syphilis. If one sees it within a year after the syphilitic infection, one is seeing something very exceptional. It is more apt to be from five to twenty years. The golden opportunity for treatment—or the arsenical opportunity for treatment—is in the earlier stages. I say "arsenical opportunity." Yet I am not one of those who believe in treating these cases with intensive arsenical treatment, at least in the later stages. There are two schools—if I may dignify it by that term. There are physicians who utterly ignore the caution given to treat these cases carefully. Such a one says: "Immediately I recognize it, that patient gets the full dose of some arsenical preparation."

There is another group—and I will put myself there—who feel that if you give this full dose at once, you may make your patient worse. You may find the wall of the aorta actually dilating week after week under the fluoroscope. The coronary artery may show evidence of acute trouble. Remember the caution Ehrlich gave when he said, one should be careful not to give 606 in cases of vascular disease in the brain or heart. This he did because there may result a local swelling from vigorous treatment. If this swelling occurs at the opening of the coronary artery, under the administration of arsphenamin it may be enough to obstruct the artery with serious consequences. In the same manner, if there is luetic disease in the artery of the brain and 606 is given in excessive doses, a swelling and sudden blocking of some important artery may result in more damage than if the patient had been let alone. I think the safe way is to give mercury and iodid in moderate doses and gradually increase the amount; then put in arsenic. In this way there is hope that one may get good results in the earlier stages. In later stages when the heart is large and the coronaries are damaged and the wall of the aorta greatly diseased, and cardiac incompetence is manifest, the treatment is not very satisfactory.

Patient No. 3: This man was seen in June, 1928, complaining of cough, palpitation, gas in the stomach, some pain in the chest, pretty severe. He had to sit up in bed. He had typical symptoms of an incompetent heart. With his working there would be a little pain—nothing frankly anginal. He had a trace of albumin in the urine. The blood showed nothing of note. A little fluid in the right side of the chest.

What attracted the attention of the doctors was not so much what they found on examination as what they found when they examined with the electrocardiograph. It looks as though there was a block in the right branch of the bundle of His. Remember any part of the conducting system may be blocked. If the lesion happens to be in the right branch, then the impulse goes over the bundle and down both branches simultaneously until it meets this obstruction. Then, instead of going to the right side of the heart, over the old route, the right bundle branch, it goes a circuitous route, around on the switch, and over to the left side. It runs a different course, pursuies a different trail, so to speak—and the electrocardiogram discloses it as you see in the tracings.

This man has had a succession of infections—sore throats, colds, influenza. A year ago he was laid up with influenza that started with a chill. Very soon he had pain in the chest and was spitting up a little blood. The doctors talked to him some about the condition of his heart. It is stretching things to say that at that time he had involvement of the heart muscle secondary to some change in the conorary artery, but that is not a far cry. It might be that some twig of the coronary became obstructed—an infectious thrombosis—and that there was a secondary softening of a small area of the heart muscle, and as a result of the scar, he is left with a fibrous patch that interferes with conduction to the right ventricle.

He gives an electrocardiogram a good deal like that of left heart preponderance. Fitting in with the notion of some old chronic infection, he has had a good deal of pain in the left shoulder—an arthritis.

Patient No. 4: I want to show one other patient with a complete heart block and a very unusual history. This woman is fifty-six. She was said to have had some heart trouble at seventeen or eighteen. She also had a goiter which had been there for several years. In April, 1926, she came to the doctor, who got a history of frequent attacks of tonsillitis, pneumonia, and in 1918 a severe attack of "flu". Thirteen years ago there was a great shock—the accidental killing of one of her relatives. After that she was subject to frequent dizzy and fainting spells which gradually increased in frequency and severity. Later she had as high as forty or fifty spells a day. She fell so many times she was often sore and black and blue. She could not tell when she was going to fall. The explanation you have already guessed, as I told you she has a heart block. That is to say, she has heart block with the Adams-Stokes syndrome. Moreover, she is short of breath. She had an enlarged thyroid and a loud systolic murmur over the precordia. The basal metabolic rate has been plus 18. A diagnosis of heart block has been confirmed by the electrocardiogram. She was given barium chlorid in doses of one-third to one-half grain three or four times a day. This was reduced to one-third grain a day. At her urgent instance, in June, 1926, the thyroid gland was operated upon. Before the operation the pulse was 60. After the operation it was 116. Barium chlorid has been continued off and on ever since. A good deal of the time she has taken nothing. The blood pressure has been as low as 110. She seems to be worse when it is down. When it is up, her annoying cardiac symptoms are better.

One more word about the condition. In examining her we can make out a slow, regular pulse, 48 to the minute. Dr. Dunn says a tracing today will probably be different from one taken last week. She has a slightly enlarged heart with a murmur at the base of a double character, making one think of a leak. I do not know what is back of all this, but whatever lesion she has is not a lesion that has cut the bundle completely, in an anatomical sense. If she had an obstruction that had cut the bundle and scar tissue had replaced the whole of it, we would know that the bundle is gone. It is the only physiologic connection between the auricle and the ventricle, and the case would be hopeless so far as even temporary restoration of normal rate and sinus rhythm.

If some lesion is present that produces a partial physiological severance of the bundle, the remaining more nearly normal of the bundle is capable of transmitting the impulse, though perhaps in an irregular and bizarre manner. Because she had some heart trouble at seventeen, I raise the question whether these symptoms may not indicate some congenital lesion. Sometimes the congenital lesion is a close neighbor to the bundle, e. g., a perforate ventricular septum. It is easy to have bundle tonicity interfered with by certain types of congenital lesions. I feel sure in this case we have not been dealing with a permanent obstruction; that it has been more or less of a temporary character so she has vacillated between normal rhythm, complete heart block, partial heart block, and auricular fabrillation. And best of all for her, she is still living and doing her housework and enjoying life.

Dr. Bohan, this morning, told you that in a complete heart block you could give all the digitalis you wish. If the bundle is entirely gone, you cannot still further depress the conductivity. There need be no hesitation, therefore, in giving digitalis if it is indicated by other conditions such as auricular fibrillation. (Shows slides).

One final point. These various kinds of irregularities could not be detected in any other way than by the electrocardiograph. If I had time I should like to defend the electrocardiograph—if it needs it. It did need it a few years ago. It was looked upon as an instrument too expensive for anyone to buy unless wealthy and extravagant. It was looked upon as a complicated instrument that required a mechanic to look after it. I remember Walter James telling me it required a physicist! I am no mechanic, yet I bought an electrocardiograph and used it and it helped me a great deal. Similarly I bought a new automobile, found it helpful, and yet I did not know how to take care of it. Now I rely on somebody else's automobile but I find the auto very useful. I use a telephone and don't know much about the making or operating of it. You do not decry the x-ray because you do not understand the physics involved or the mechanism of the machinery. The machine is complicated. You would not use it yourself but you make use of it. Here's the point. The x-ray will help you to know something about the chest and the gastrointestinal tract in normal and abnormal condition. You should, therefore, know something of roentgenograms and their interpretation. So the general practitioner should know something about a normal and abnormal electrocardiogram. Many things about it are not yet understood, but a great many things have been settled for all time. Certain pictures represent a normally acting heart; other pictures represent an abnormal heart. The pathology that is shown up is not so much of the valves as of the muscle of the heart, which is, after all, the important part. We have talked a great deal about a defect in the conducting system. That defect is really evidence of disease in the muscle itself.

I believe the electrocardiograph is an instrument that has come to stay. It helps in diagnosis and in prognosis and, therefore, in treatment.

GOD - ANGEL - MAN - DEVIL

When the sick man lies abed distraught with pain
And dismal Death is clutching at his throat,
He likens me to GOD—and all his house
Kneel down and do me reverence.
When easier lies his head and icy death
Removes his hand, and warm the blood rebounds,
He blesses me as Messenger of God
And Holy ANGEL from ethereal High.
But when the full and rosy touch of life
Bestirs his flesh and puts his soul to sleep,
He greets me as a MAN tho' one of might
And versed in all the wisdom of the world.
And then at last when recompense is asked,
He passeth me in dread, For lo! to him I stand
A DEVIL horned from out the lowest depths.

—Legends on a Series of 16th Century Priests.

THE HUMAN MIND

Canst thou not minister to a mind diseas'd,
Pluck from the memory a rooted sorrow,
Raze out the written troubles of the brain,
And with some sweet oblivious antidote
Cleanse the stuff'd bosom of that perilous stuff
Which weighs upon the heart?

—Shakespeare.

PEDIATRIC CLINIC*

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Patient No. 1. This baby is three months old. Two weeks ago, one and one-half hours after feeding, the child vomited, projectilely. No temperature noticed by the mother. Vomiting not characteristic in odor or color. The attack lasted four days. Last Tuesday, child vomited after feeding. Cried more. Mother thought she noted changes due to loss of weight. Labor easy and no complications. Lasted less than half a day. Baby was to the mother normal until two weeks ago. No history of syphilis or gonorrhea or tuberculosis. Baby fed on Eagle Brand Condensed milk.

Child pale when brought into hospital on October 5. Anterior fontanelle bulging under pressure. Head had appearance of hydrocephalus. Rigidity of the neck marked.

The natural thing to do was to examine the spinal fluid. This was done and the fluid was bloody. When first seen it suggested puncture of a blood vessel. Repeated puncture showed bloody fluid. Therefore this process was essentially a bloody process in the spinal canal. If you get blood from the spinal canal on puncture. usually the blood will come down leaving supernatant liquid pale and colorless. If there has been a hemorrhagic condition in the canal for any length of time, then you have destruction of the hemoglobin and red cells so that the fluid after centrifuging is definitely yellow or orange.

That is what they noted here. Repeated punctures showed first, that the fluid gradually lost its blood tinge, but still after it became clear was definitely xanthochromatic. Second, toward the end the punctures brought less blood, and the pressure was not influenced by the crying of the child, suggesting a stoppage above.

We find the baby in a fair state of nutrition. The elasticity of the skin is quite good. There is a fair amount of fat. Nor has the child the aspects of a marantic baby. We are mostly interested in the nervous system. There is a definite knee reflex, possibly slightly exaggerated. No ankle clonus on either side that I can elicit. I can not palpate any spleen. The liver is just palpable below the intercostal margin, which of course is normal. There are no axillary glands and no epitrochlear glands. I take it for granted the chest is clear. We find the anterior fontanelle is somewhat enlarged—about two inches long and the same width. The sagittal suture is closed. The fontanelle is bulging and definitely distended. The neck is quite stiff. The baby does not seem happy.

The question comes as to what was the primary condition here? Hemorrhage may occur, of course, as a result of an injury. There is no history of an injury here, and evidently this mother watched her baby very carefully. We therefore have to consider some other source—a hemorrhage at the time of birth, a brain tumor, or an involvement with hemorrhagic exudate.

This child was three months' old before symptoms showed up. Certainly if a child has a hemorrhage at the time of birth, the bloody fluid disappears within a week's time. It is practically out of the range of possibility for this bloody fluid to have been caused by hemorrhage at the time of birth. We, therefore, have to think of some pathological condition in the brain to produce such a hemorrhage. I have never seen a brain tumor in a child this age. I have never seen one produce hemorrhagic fluid. There is only one condition I know of in a child of this age which produces a bloody fluid, and that is a condition about which not a great deal is known. The cause of the condition is not known. Repeated attempts at culture were negative. No bacteria have been grown from this fluid. The condition occurs in young infants, and is more likely to occur in marantic infants.

The symptoms can at times be most masked so that you have only a slight suggestion that anything is there. It is only when you do a lumbar puncture and notice bloody fluid that the condition suggests itself. The symptoms may be marked and you may think you have a typical meningitis, yet find only bloody fluid. These cases usually carry with them the results of the onslaught. As a consequence, they have physical and mental defects which they carry through life.

There is a point about this child which is rather significant, and that is the enlargement of the head. That, together with the fact that the quantity of fluid is decreasing, leads one to think you have a hydrocephalus of a definitely obstructive nature. I saw one case of this condition where we did not get anything in the spinal fluid, yet I was so sure something was wrong that I put a needle into the fontanelle, running it back under the parietal bone and obtained a bloody fluid in this way. This was done two or three times, and each time we got a fluid less bloody and more xanthochromatic. It seems apparent there has developed something like a hydrocephalus. We cannot say if this is an internal hydrocephalus of an obstructive nature, or an external. I would hesitate to say which. If it is a case of internal hydrocephalus of an obstructive nature, it seems to me that the head is showing not quite enough of distention. In an obstructive hydrocephalus in a child of this age we are likely to get separation of the sutures and somewhat larger posterior fontanelle. We have here a head with separation of the sutures and distension of the fontanelle. It seems to me on clinical evidence this points to an external rather than an internal hydrocephalus. It is possible that a lateral view by x-ray might give us points, in that it might show a little less density in the periphery of the brain shadow. I would hesitate to say anything more than that I would be suspicious it was an obstructive external hydrocephalus rather than internal. The case is one of pachymeningitis hemorrhagica.

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*Presented before Missouri Valley Medical Association, Omaha, October 31, 1928.

Paient No. 2. (Dr. Floyd Clarke reads case history.) The first thing that strikes one is an immensely enlarged abdomen. That is in contrast to the emaciation of the chest and the smallness of the legs. The spleen, as nearly as I can make out, comes nearly to the pelvic rim. The liver is likewise moderately enlarged, coming to the umbilicus. There are a few glands in the axilla.

Here is a case hard to differentiate. He is very yellow and shows cachexia, and the question is: What have we here? Have we a case of leukemia or of von Jaksch anemia? The differentiation is a hard one to make. If it is leukemia, it is a lymphatic leukemia. It is not a myelogenous leukemia, with the percentage of myelocytes is small and of the lymphocytes high. The slide gives one the impression of lymphatic leukemia. When you think of some of the other phases, you wonder. If this were lymphatic leukemia in a child of this age, you would expect 98 to 99 per cent of your cells to be mononuclears, especially with a count of 150,000. With a lower count, the percentage of lymphocytes might be lower. The nucleated reds are present in large numbers. There are all sorts of changes in the red cells, together with nucleated reds, but without any microblasts.

When we turn from the blood picture to the clinical side, we have something to explain. How do you explain the immense size of the liver and spleen if the case is one of lymphatic leukemia? You simply don't. It may be a mixed leukemia, but you would expect your microblasts in larger numbers. You can explain this as a variation of von Jaksch anemia. You have an anemia with an increased number of white cells. One hundred fifty thousand is not an unheard of count in von Jaksch anemia. You have a preponderance of mononuclear cells. You have nucleated reds. You have masses of protoplasm that cannot be classified. Then you have an immense enlargement of the liver and spleen.

During the five months the child has gained two pounds in weight. A lymphatic leukemia of the acute variety, rarely if ever lasts five months. If you have an acute lymphatic leukemia the mononuclears are large. Most of these are small. As a matter of fact, when I looked at that slide I thought it was leukemia. When I look at the baby and take into consideration the physical condition, I think it is von Jaksch's anemia. You can "pay your money and take your choice."

If this is true, the outlook for this child is much better. It may get well. If it has leukemia, it will not. Nobody has ever known of a child with leukemia to live. With von Jaksch's anemia many of them live. The enlargement of the liver and spleen are not symptoms which speak against the chance of this child to recover. There might be other things thought of. But with this count, it seems to me such infections as kala-azar are hardly to be thought of. This occurs in the Mediterranean countries and I have never seen a case. They do not, so far as I know, have a count like this.

I told you this morning my experience with von Jaksch's anemia. I was certain I had a cure for it once by giving intraperitoneal blood. Some way or other I question if we are going to influence the course of this case very much one way or the other, except by general hygienic treatments. I should give it a good diet with plenty of iron in it. If the blood showed a tendency to go down, I should give it blood. I should use such measures as I could to keep up its general condition, being careful not to use anything of a radical nature. I would not do any wild stunts on that baby with the idea of curing it, and feel if I did, I had done something for the good of the child. I would treat it symptomatically. I do not think we know enough about these cases to say what we can do with them from a therapeutic standpoint. I once thought I did.

DISCUSSION

FLOYD S. CLARKE, M. D., (Omaha): Do you consider that blood picture sufficient evidence to give a transfusion?

DR. GRULEE: I would not. There is 38 per cent hemoglobin and 2 million reds. I would wait on that. If it started down, I would do something. I had one recently without any treatment but spinach in the food come up from 40 to 80 per cent in two months' time. Watch these cases and if the hemoglobin and blood get too low, I would usually give a transfusion.

DR. CLARKE: Will x-ray treatments reduce the spleen?

DR. GRULEE: Yes, but they won't help the anemia. I had one case where the spleen was so large it rested on the pelvic rim and pressed on the stomach. The vomiting quit as soon as we got the spleen down, but the child died.

I do not see any evidence that liver preparations have done much except in the treatment of pernicious anemia. It is a shame to raise the price of liver the way we have experimenting on these anemias. They have doubled the price of calf's liver by feeding liver to these anemic patients. It probably does no good except in pernicious anemia. The Germans made up a sort of liver soup they fed to the children, long before the question of the use of liver in anemia was broached. There is no reason why we should not use it, but I should not hope very much for success.

Patient No. 3. Here is a boy five and one-half years old. His mother died three years ago of nephritis. Father living and well. One other child dead of pneumonia. No miscarriages. Full-time; normal child; breast fed. Never seriously sick. Family noticed pallor of child three years ago. Has had enlarged spleen since last year. Blood examination showed 60 per cent hemoglobin, 3,360,000 reds and 13,400 whites. I looked at the slide and it did not show much abnormal. He has a spleen which is enlarged, but not immoderately so. Compared with the other spleen, this isn't much of a spleen. It is three fingers' breadth below the costal margin. A sharp edge—giving the impression that it has existed for some time. His dark yellowish color is probably partly due to his nationality. He has a snappy pulmonic second tone but no murmurs. Has a few glands in the neck.

This case offers, to my way of thinking, not so much a question of a differentiation of anemias—because while he is anemic it isn't so very marked—so much as a differentiation of splenic enlargements.

To show you how short a sojourn in a malarial country it takes to do things, I will give this instance: The son of my secretary, this spring, went to Memphis for three days, and in two weeks had a temperature of 106°. When we saw him, he had a big spleen and his blood was full of malaria parasites. He never had been south before in his life. They say since the flood, the malaria has been peculiarly virulent and active. There is a great deal more of it than before. That is why I asked carefully whether this boy had been out of this country. We, in Chicago, see so little of malaria we almost forget it exists, and I suppose the same is true in this section of the country.

This might be a mild case of von Jaksch's anemia. On the other hand, there are points against it. First and strongest is perhaps the age of the child. The cases of von Jaksch's anemia I felt sure were von Jaksch's in children over three years of age have died pretty rapidly. This condition has been going on for some time. Almost any type of infection can cause enlargement of the spleen in babies—not so frequently in children. An infection of this extent would have to have been of a long duration and chronic nature, and this boy is in good general condition.

An infectious spleen usually feels soft and has a rounded border. This spleen is hard and has a sharp border. The other conditions are rather unusual. Myelogenous leukemia is almost unheard of. Banti's disease, Gaucher's disease are possible. In any one I think with the possible exception of Banti's, I would expect to see a larger spleen. I have never seen a case of Gaucher's or Niemann-Pick. In these conditions characteristic fat globules are found in the cells in the spleen. Gaucher's has one kind and Niemann-Pick has another. They both have splenic enlargement and a certain amount of anemia.

Then you get hemolytic icterus. This boy does not give such history. It probably is not an amyloid spleen, because he has had no long-drawn-out infection of either a tuberculous or purulent character. This is a mild case of von Jaksch's disease or perhaps something else I do not know. I am puzzled about that spleen, because it does not fit into anything exactly. It is not a kala-azar, because he has been in this country always. It hasn't the feel of an echinococcus cyst. You must consider rare things, because the condition is an atypical one.

DISCUSSION

DR. CLARKE: Will secondary anemia give rise to an enlarged spleen?

DR. GRULEE: I do not think so—not one as large and hard as that. You might get some enlargement, but I should suspect it was on the basis of the cause of the secondary anemia more frequently than the anemia itself.

ANDREW G. DOW, M. D., (Omaha): There have been little attacks of yellowness in the eyes—quite a little jaundice.

DR. GRULEE: That may mean we have congenital hemolytic jaundice, which would mean this condition would be entirely cleared up by removal of the spleen. Nothing like that in the family. If he has attacks of jaundice, that would be probably a better guess than the von Jaksch's anemia. The case ought to be carefully studied.

DR. DOW: Would the fragility of the cells make a difference ?

DR. GRULEE: Yes.

Patient No. 4. (Dr. Herman M. Jahr gives case history, as follows):

A premature baby, seven months old. Mother had eclampsia and she was delivered by Ceasarean. Physical examination showed bright baby with pale complexion. Sort of a lemon-yellow tint. Systolic blow at the apex over the aorta. Vessels enlarged. Diet rich in vegetables with beef juice and eggs. Hemoglobin fluctuated between 30 and 50 per cent. October 23 it was 63 per cent.

DR. GRULEE: This is evidently a secondary anemia in a premature child. That fits in well with what I told you that in premature infants we frequently get the chlorotic type of anemia. That is what has happened here. She has slowly but surely come up by the use of iron-rich food. This is the other type of secondary anemia—probably on the basis of prematurity—of chlorotic type. I could not have had a nicer case to exemplify it.

In younger children where you have somewhat more marked anemia early, you get more rapid results by the use of blood intraperitoneally. This is the type of case in which you get best results by blood transfusions. Under the circumstances, this child has done well, although the return has been slow. I think she will probably come back to normal condition in a comparatively short time.

Patient No. 5. (The following case history was given by Dr. Jahr):

This child is three years old; came May 14 with peculiar complaint. She had swallowed a little dog ten days before and the mother did not notice the dog in the stool. An x-ray film did not show it. Six days later she had a coughing spell and the dog came up. She noticed a pale color. The hemoglobin at that time was 55 per cent with a white count of 9,200 and a red count of 3,960,000. She has been improving. We lost track of her four months ago.

DR. GRULEE: The most interesting thing about this is that the x-ray didn't find the dog. When it can't find a lead dog, how will it find tuberculosis. The dog, of course, was in the naso-pharynx.

The child looks quite anemic. I think probably this is a problem of infectious anemia secondary to repeated infections of the upper respiratory tract. This child needs a search for a focus of infection. Although I come from the home of focal infections, I am not a fanatic on the subject. I think this type may be benefitted by transfusion. In a case where the infections process has lasted quite a while and is not of an acute variety if the child has severe anemia transfusion not only helps the anemia, but has a great deal of value in overcoming the infection.

STUDIES ON THE TESTICLE WITH ESPECIAL REFERENCE TO TRANSPLANTATION*

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From the standpoint of the topic which I wish to present this morning, we will deal with a nonclinical approach to some of the aspects of the problem of interest to the medical men. Insofar as there are a large number of various problems involved, and insofar as I do not believe it is profitable to go into great detail, I will ask your pardon for presenting some of the topics rather superficially, actually only introducing them.

We understand transplantation as being the complete removal of the sex glands and their transfer to a new location in the same organisms or another organism, usually of the same species, but in certain cases in other than the species of the donor.

Let me dwell briefly on the introduction of this topic from its historical aspects. In 1749, Berthold accomplished the first successful testis transplantation. It is very significant that it was tried and accomplished in one of the easiest of all the species to effect transplantation: the bird. The early attempt was successful in that a testicle from a cock was transplanted into another one from which the testicles has been removed, and the capon characteristics prevented from developing.

This was practically the status of the problem for a considerable length of time, and was the beginning of the demonstration that there is such a thing as an endocrine property associated with sex glands.

A little later, the work of Brown-Sequard started anew the study of sex gland hormones by work which has become classical and known to all: he injected into himself extracts of testicular preparations and reported beneficial results. He considered that his life and particularly his bodily and mental vigor had been so beneficially influenced that he was able to carry on his scientific work for many more years than would otherwise have been possible. In the city from which I come shortly after the publication of Brown-Sequard's contentions, practically any drug store would have supplied different brands of testicular products for the purposes of sustaining youthful qualities.

This state of affairs gradually declined until the work of Steinach about 1910, who approached from an academic viewpoint the problem of transplantation and carried on experiments in his laboratory on various animals, particularly rats. Later, transplantation was extended by other workers to include the human individual, and at the present time, particularly for the last five or six years, we have had several reports of transplantations of testes into men, for the purpose of warding off old age or to benefit some real or imaginary defect.

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My own personal interests have been purely of an academic sort and experiments were started as a means of finding, if possible, the solution of some of the problems presented by the endocrine glands. I want to present to you some of the things we have been finding in the course of twelve years' work, and let you see how the problem has begun to unfold. (Shows slides).

When testis tissue of mammals is successfully transplanted subcutaneously or intraperitoneally we have usually, instead of the normal seminiferous tubules lined by germinal epithelium, very much smaller tubules containing a single basal layer of sertoli cells. In the grafts the intertubular spaces are very often more extensive and contain many interstitial cells, so many in proportion to the degenerate tubules that some authors have described the condition as a "compensatory hypertrophy." No germ cells are present in these grafts.

Such a graft as I have shown you is typical of those described by Steinach, Sand, and others. But in the course of our work we have recovered rat testis grafts that showed a considerable amount of germinal epithelium and active cell division. No graft recovered from the usual site of transplantation, however, showed development of the germinal epithelium to the stage of spermatozoa. Why, in spite of cellular activity, completely mature germ cells were never found was a problem: the answer to the problem was given by our study of the experimental cryptorchid testicle.

It has been known for centuries that both man and domestic mammals experience the failure of the descent of the testicle. It has been known that such individuals were sterile. It has been known for a shorter period of time that those undescended testicles showed seminiferous tubules without active germinal epithelium, in fact, almost always the germinal epithelium is absent. The cause of this condition has been noted as a faulty embryology.

In attempting to study cryptorchid testicles, we attacked the problem experimentally. We find that the inguinal canals in such animals as the guinea pig are patent. One can push the testicle through the open canal back into the abdomen, and it is a simple matter to fasten the testicle within the body cavity. Such a procedure gives striking results.

A guinea pig testicle confined in the abdomen for a period of one week, when sectioned, is found to contain seminiferous tubules in a state of total disorganization; the germinal epithelium is found to be vacuolated and many cells undergoing degeneration. When confinement to the abdomen has persisted for two weeks the germinal epithelium is more degenerate and has for the most part been removed; by three weeks, few if any, cells of the former germ cell producing portion persist and the tubules contain only a single layer of sertoli cells.

In short, the testicle, when removed from the scrotum into the abdomen, undergoes rapid degeneration and never recovers its spermatozoon producing capacities as long as it remains in the abdomen. This condition prevails despite the fact that its blood supply, nerve connections and vas deferens have been undisturbed.

On the other hand, if these testicles which have undergone degeneration from being confined within the abdomen are replaced in the scrotum, recovery follows and after a period of three months in the scrotum following replacement, one is able to find newly formed spermatozoa.

The question of congenital cryptorchidism as it might apply to the human, with the possibility of normal testicular development following scrotal replacement can be attacked experimentally on guinea pigs as follows:

Young male guinea pigs produce spermatozoa approximately fifty days after birth. If the testicles are removed from the scrotum into the abdomen a few days after birth they never produce sperm but remain in the undeveloped, more or less embryonic, state. Such testicles replaced in the scrotum after an abdominal residence of about five months, will develop into quite normal organs, actively producing spermatozoa, within a period of approximately ninety days. Roughly considered, the period of abdominal (experimental congenital) retention of five months in a guinea pig corresponds to the human cryptorchid of approximately twenty to twenty-five years. There is good indication, therefore, that undescended testicles in a young man twenty years of age will develop normally provided they are placed in the normal scrotal environment.

The general condition I wish here to emphasize is that the germ cell producing capacities of a testicle can be realized only when these organs are located in the scrotum. Such being the case why cannot we expect testis grafts in a scrotal position to develop into spermatozoon producing tissues? This is actually what happens.

Using the rat as the experimental animal, whole testes from animals two to twenty days after birth were transplanted into the scrotal pouch of animals sixty to ninety days of age, from which the normal testes had been removed. Recovery of these scrotal grafts four to six months later showed that not only had the transplanted tissue become incorporated in the body of the host and persisted but also that many of the seminiferous tubules had completed spermatogenesis as evidenced by the presence of spermatozoon within them.

One cannot work with testicular tissue showing the characteristic differences in reactions it does when inside the scrotum and outside of it, without making inquiry as to the cause of the difference. Why does testicular tissue degenerate in the abdomen or testicular grafts produce spermatozoa only when they are located within the scrotum?

From a consideration of many possible causes as an explanation, the working hypothesis of higher temperatures being injurious to the reproductive portion of the testicle has served to extend observations in several different directions and proof of the correctness of the idea may be supplied from the following facts:

The ram has a pendent scrotum capable of being insulated against loss of heat by wrapping. By carefully incasing the scrotum in woolen wrappings and without any other operation rams running loose in the barn yard for periods of eighty days have been found to possess testicles whose epithelium was degenerate; no normal seminiferous tubules remained. From this and other findings it becomes clear that such animals sterilize themselves by their own body heat because the scrotum, through insulation was prevented from carrying on its function of producing a lower environmental temperature for the testicle.

That a lower temperature exists in the scrotum than in the abdomen was determined by introducing two thermometers into the abdomen of rats, rabbits and guinea pigs. The bulb of one thermometer remained buried in the viscera while the other was pushed through the open inguinal canal into the scrotum. Readings on the two thermometers at the same moment showed that the temperature of the scrotum was considerably lower than in the abdomen. Scrotal temperature was found to be from 2° C. to as much as 7° C. lower than abdominal temperature.

Thus the abdominal temperatures are higher; scrotal insulation causes degeneration of normal seminiferous tubules; testes elevated from the scrotum into the abdomen become degenerate; and scrotal testis grafts are the only ones which produce spermatazoa. It would then appear that the only element lacking in establishing proof of the temperature effect and scrotal function is the demonstration that higher temperatures within themselves can cause seminiferous tubule atrophy. This we have proven to be the case by applying higher than normal body temperature to the scrotum.

Guinea pigs, lightly anaesthetized, were placed ventral side uppermost and water warmed to approximately six degrees centigrade above body temperature allowed to bathe the scrotum continuously for a period of fifteen minutes. The testicle of guinea pigs so exposed to a single treatment were found ten days later to be highly degenerate. The same typical degenerative changes occurring after elevation into the abdomen, or after scrotal insulation, were found in these warm water treated males. More prolonged treatments, or the utilization of higher temperatures, renders the animal temporarily or permanently sterile.

From such experiments as are reported above we have concluded that the scrotum of mammals functions as a local heat regulatory mechanism, that effectively reduces the temperature about the testis. This regulatory function is necessary for the testicle to continue to produce germ cells. Preventing the action locally or transposing the testicle to other parts of the body results in the degeneration of the reproductive portion of the organ.

Returning to the question of testis transplantation, in particular to the percentage of successful "takes", with graft recovery, I have been able to recover one hundred and fourteen grafts out of one hundred and ninety-three made, or a gross recovery of approximately 59%. These were rat testis grafts, the material to be transplanted, having been taken from rats before the age of fifty days and placed immediately into young, healthy adults.

It should be emphasized that a palpable nodule at the site of transplantation is not a safe criterion of graft persistence. Many large sized nodules removed as a graft proved to be only fibrous nodules devoid of any testicular tissue. Transplantation carried on between animals of the same species have a certain degree of chance of persisting but probably little if any chance when the tissue transplanted has been taken from a donor of a different species than the host.

In discussing the function of a graft we tread on uncertain grounds for the reason that sufficiently delicate indicators for the function of a graft are sadly lacking. Reports of successful transplantation of testes in man have been based almost entirely upon subjective criteria, such as the feelings of individuals shortly after transplantation, as they relate to sex inclinations, headaches, general bodily vigor, etc., and in part reports have been given that such general debilities as asthma, hay fever, myopia, sex lassitude, tuberculosis, high blood pressure and many others have shown improvement after the introduction into the patient of testis material in various ways. I am unable to credit such remarkable effects to the introduction of testis tissue. Since the only possible effect must come from an introduction of the internal secretion or hormone, we must either grant that the internal secretion is liberated from the introduced tissue while it is undergoing autolysis or else the graft must persist and produce the hormone to be liberated gradually as it is normally. Practically all reports of human testis transplantation has mentioned an inflammatory condition at the site of transplantation—(swelling, hyperaemia, suppuration and sloughing), thus giving proof of tissue destruction rather than tissue incorporation and persistence. We require, therefore, some test tó show that under conditions such as these, hormone has actually been liberated, and up to the present time we have no such test.

In searching for short time indicators of the testis hormone that could be applied to animal experimentation, I have found that the differential survival of spermatozoa in an epididymis serves as a fairly dependable criterion for the presence of the hormone. Thus, if a mature guinea pig is operated so that the testis is removed from the epididymis, the latter organ contains spermatozoa that remain alive for a period of but 23 days provided there is not a hormone supply. On the other hand, if one testicle provides a hormone supply and the epididymis of the opposite side is used as the test (the testicle having been removed from it) its contained spermatozoa remain alive for 65 days. The difference between spermatozoon life of 23 days when no hormone is present and that of 65 days when there is a hormone supply thus serves as a means of detecting the presence of this substance. We have tested the reaction under many conditions and have been able to detect a hormone supply for as brief a period as ten days; small living testicular fragments, cryptorchid testes not producing germ cells, and extracts of testes have been found to give a positive test using the sperm life as an indicator. Transplanted testes of the guinea pig that have undergone autolysis and suppuration and have failed to persist have produced either no hormone or else hormone in such small amounts that it cannot be detected by this indicator. Thus one of the most delicate objective tests that we possess today for the internal secretion of the testicle has failed to show that a non-viable transplant of a testis produces an appreciable amount of hormone. The test has shown also that as soon as the testicle is removed all indications of hormone production are absent. This evidently means that the hormone is not retained in the body for an appreciable length of time and that probably, as has been shown for the follocular hormone, it is rapidly "excreted."

The clinical evidence that has been presented for the marvelous effects of transplanting a bit of testis tissue into man, and such effects as have been claimed to be noticeable for a period of two or three years, must, it seems to me, be entirely discredited. Objective results of an irrefutable character for the effects of a testis graft must be demanded before the method of transplantation can be accepted as a therapeutic measure. Work is being extended on the study of transplantation and administration of extracts of testes, but future developments cannot at present be anticipated.

Such is the general trend of our studies on the testicle.

RENAL BACK PRESSURE

Henry A. R. Kreutzmann, San Francisco (*Journal A. M. A.*, Jan. 19, 1929), concludes that the cause of upper urinary tract dilatation in obstructive lesions of the bladder neck and urethra in adults is a stenosis of the intramural portion of the ureter. This constriction is due to hypertrophy of the bladder muscle. When reflux is present, the increased intravesical pressure tends to keep the upper urinary tract dilated to its maximum. After removal of the urethral obstruction, the bladder wall loses its hypertrophy, the stenosis disappears, drainage is improved, and the ureters and kidney pelves return to normal.

MANAGEMENT OF EMPYEMA COMPLICATING INFLUENZA OR EARLY IN PNEUMONIA

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(Fourth of a series of articles on Thoracic Surgery)

In the management of empyema it should be remembered as a paramount principle that hasty evacuation of pus is seldom necessary. There is always time to carry out the necessary examinations and observation to determine the extent and location of the pus, the amount of intrapulmonary involvement, the extent of pressure and dislocation of the mediastinum, the vital capacity and degree of cardiac embarrassment. The factors just noted are of vital importance in determining the course of action. In a large measure this data may be learned through purely physical examination. The percussion and auscultation methods if thoroughly carried out should disclose the site and location of pus and the associated lung involvement. The heart, together with other structures in the mediastinum, may be displaced. Whenever possible the physical findings should be supported by a radiograph of the chest. Impaired vital capacity may be clinically evident by cyanosis, and rapid labored respiration.

The use of a spirometer of the Krough type gives a precise measure of this capacity and is a valuable means of estimating the patient's tolerance of open thoracotomy. The size of the heart, its regularity and efficiency together with a blood pressure reading will show the extent of heart embarassment. There is valuable clinical significance to the observation of blue dyspnoea or white dyspnoea. In the former the efforts at compensatory increase of respiration is falling short of adequate oxygenation, or in other words the vital capacity is too low for the demands for oxygen and further reduction of vital capacity cannot be tolerated. In white dyspnoea the chance of tolerating some further reduction in vital capacity is better.

The cardinal principles in the treatment of empyema are to

1. Maintain nutrition.
2. Remove the pus avoiding further reduction of vital capacity.
3. Sterilize the cavity.
4. Obliterate the cavity.

To support the patient the entire problem of nutrition and elimination may tax the ingenuity of the internist. Graham says "the maintenance of nutrition is of fundamental importance." Failure to prevent loss of weight contributes to the mortality. An emaciated patient with impoverished nutrition lacks resistance. Bell of the Empyema Commission in the World war determined that a diet of as much as 1500 to 1700 calories was insufficient to avoid a negative nitrogen balance and that the nitrogen loss may be as high as 21 grams a day. Rapid loss of weight naturally results. He found further that if the mixed diet intake was 3300 to 3500 calories loss of weight did not occur and there may be actual increase. The difficulty of feeding is encountered only during the febrile stage, but even then utilization of liquids offers a means of administering a considerable amount of nourishment. Graham suggests that lactose because of its little taste offers a convenient means of administering carbohydrates. The patient should be given as near 3,000 calories per day as possible and the diet should be a mixed one. Fluids in abundance, i. e., from 3,000 to 4,000 cc per day is advisable and during the febrile stage fruit juices, meat extracts, soups, broths and lactose should be forced under control of calorie estimation. The quantity of food value should not be left to chance. The administration of glucose intravenously is urged by some and it is claimed for it that in addition to its nutritive value it has a stimulating action on the right heart. Circulatory competence may require such stimuliants as caffeine, camphor, digitalis, etc. Cough is often distressing and exhausting and should be kept under sufficient control to secure adequate rest by the use of codeine or morphine. The value of expectorants or antiseptic inhalations and of vaccines and sera are not well established but are justifiable especially for the management of the associated pneumonia. Thorough ventilation of the room and an abundance of fresh, but not necessarily cold, air is essential. There are many enthusiasts for inhalations under a tent which form of treatment is apt to make impossible the more important element of fresh air.

2. Removal of pus avoiding further reduction of vital capacity. There is no question but that early and complete removal of the pus is desirable. Nevertheless, the earlier teaching and much of present day literature over-emphasizes the removal of the pus. Many surgeons, especially since the experience of the late influenza epidemic emphatically disagree with such dictums as the opening statement in Tice under the section on treatment which is "The pus in a case of empyema should be removed just as soon as

discovered no matter how sick the patient is." The time element and the manner of removing the pus have been subjects for study discussion and argument in recent years and those who were fortunate to have an extensive experience in influenzal type of empyema have arrived at unanimous and positive agreement that no open thoracotomy should be done early. The mortality in a series of cases drained by early open thoracotomy was 50 per cent while a similar series in which operation was deferred until the pneumonia had run its course presented a mortality of only 10 per cent. Graham is probably justified in believing that the explanation of the higher mortality rate is the reduced vital capacity of the thorax. Others have believed that toxemia is increased by open thoracotomy early in the disease and that later in its course antibodies have developed and resistance against infection has raised. The latter group are guided in the time to operate by the character of the pus. Ashley has stressed the importance of refraining from the production of an open thoracotomy so long as the pleuritic exudate is thin and greenish in hue. After the pus has become thick and creamy open thoractomy is relatively safe. The main problem in the management of empyema is the method and time of drainage. In spite of the fact that periodically over the past 40 years eminent surgeons have stressed the great danger in early open thoracotomy the most of our surgical treatises lay the first emphasis on evacuation and drainage. The fearfully costly experience of the World war epidemic has sufficed to largely displace, but not entirely eradicate this teaching. The principle of first importance is avoid early open thoracotomy. This principle is well established from the clinical evidence of higher mortality if early operation is done and cognizance should be taken of it irrespective of whether reduced vital capacity due to associated pneumonia processes or unfavorable time from the standpoint of toxemia is the explanation of it. The removal of pus may be accomplished by

1. Repeated aspirations.
2. Closed thoracotomy.
3. Open intercostal thoracotomy.
4. Open thoracotomy by rib resection.

The choice of these operations rests with the stage of the disease, the associated pathology and the character of the pus. The first aspiration will usually be a diagnostic one, even though the presence of pus may be quite certain. The indication for repeated aspiration is the early stage of the disease and especially when active pneumonia is present. Long continued pus in the pleural cavity undoubtedly thickens the pleura by organization of fibrinous placques and a pleura thus thickened may rigidly compress the lung. Chronic empyema and contracted lung will result. This result need not be feared or expected within a period of a few days to two weeks after the onset of pleuritis. The only other indication for evacuation at this time is circulatory and respiratory embarrassment from excessive pressure. Therefore, there is no necessity for hurried complete evacuation. Repeated aspirations may be carried out as often as is necessary to prevent excessive lung compression and mediastinal pressure over an interval of a few days or until the associated pneumonia has passed or until the character of the pleuritic exudate has changed from a thin seropurulent greenish fluid to one of frank creamy pus. The clinical evidence of low vital capacity such as rapid exaggerated breathing and cyanosis should warn against more active interference, but the spirometer test furnishes a more exact and precise estimate of the impairment of vital capacity.

Closed thoracotomy is the term applied to the insertion of a rubber tube drain into the pleural cavity through a trocar by means of a technic which avoids pneumothorax. The tube is left in situ and is clamped shut always except when connected with a syringe for aspiration or irrigation. The advantage of the closed method is that it obviates the distress of frequent thoracentesis and at the same time permits frequent aspiration and irrigation of the cavity. A special trocar and cannula which has a double barrel on the proximal end is a convenient instrument. Through one barrel the obturator passes. This is withdrawn after the instrument has entered the pleural cavity and through the other barrel the drainage tube is passed into the pleural cavity and the instrument is then withdrawn leaving the tube in situ. No air is permitted to enter the thoracic cavity at anytime, care being used while aspirating to clamp off the tube whenever the syringe is disconnected from it. At the first aspiration no attempt is made to remove all the pus as coughing or collapse may result.

Aspirations are repeated every 2 to 4 hours and followed immediately by irrigations preferably with Carrel-Dakin solution. A simple straight trocar of about size, French 16 to 28, may be used instead of the special trocar. In large empyemas the intrathoracic pressure will be high enough to maintain a flow of pus through the cannula which excludes the air during the short interval between removing the trocar and inserting the tube. (See section on technic). Effective management by closed drainage technic demands more constant post operative attention than open pneumothorax, but when properly carried out the mortality is low, the period of convalescense is relatively short and recovery with complete cavity obliteration is obtained in a high percentage of cases. The results of the empyema commission showed decided advantage in favor of closed drainage. Occasionally thick fibrinous placques occlude the tube and necessitate open thoracotomy.

Closed thoracotomy is indicated in early stages of all empyemas. It is the operation of choice when pulmonary complications exist with the empyema. As a method of drainage to institute early in empyema and especially when pulmonary complications exist it is firmly established that closed drainage is much better than the open method. It is still a mooted question whether open thoracotomy gives better results as to morbidity and mortality in the late stages or when empyema has developed or is discovered after the pneumonia has subsided. Comparison of series of cases of the latter type show little, if any, advantage to either method of treatment. In these late cases the open thoracotomy is safe and is particularly advisable when the more exacting post-operative management of the closed method cannot be accurately carried out.

Intercostal thoracotomy: Occasionally this method of drainage is selected. It has the advantage over rib resection of less shock. Under local anaesthesia a simple incision through the intercostal tissues to the pleural cavity is made and through the opening two small drainage tubes are quickly inserted before much pus has escaped. Quick insertion of the tubes may prevent entrance of air to the thoracic cavity. Pneumothorax should be prevented by tight closure of the wounds about the tubes and firm dressings. The tubes should be clamped off until the patient is returned to bed and then the tubes may be connected to long tubes which extend to a pail or bottle at the side of the bed. The end of the tubes should be under water to avoid entrance of air to the cavity. Intercostal thoracotomy is seldom indicated. If the closed drainage system cannot be properly carried out and the condition of the patient does not permit rib resection drainage may be instituted in this way. The immediate post-operative mortality is less with intercostal thoracotomy than with rib resection. Drainage is less efficient and rib resection may be done a few days later. This method is really an emergency operation to fit the temporary need of evacuation of pus when the intra-pleural pressure is embarrassing the circulation and respiration and this pressure cannot be controlled by repeated aspiration or closed drainage.

Open thoracotomy by rib resection: This method of drainage was the usual one previous to the experience of the recent influenza epidemic when the advantage of closed drainage were so thoroughly stablished. It is still the operation of choice by many surgeons for post pneumonic empyema. Pus that is thick and full of flocculent solidified exudate cannot be readily removed by aspiration either through a needle or a small intercostal tube. Old empyemas are best treated in this way since prolonged and inefficient drainage may further thicken the pleura and be conducive to permanent lung compression with chronic cavity and sinus. Most cases treated by rib resection when this form of drainage is properly indicated recover promptly from a single opening especially if made low. The site for rib resection is generally the eighth rib in the axillary line, but in case of encapsulated empyema must, of course, be made where the pus is found. Multiple openings are sometimes advisable and some surgeons prefer them as a routine. The primary resection is made about the seventh rib which obviates danger of penetrating the diaphragm. With the index finger through the opening palpation of the most dependable site which is usually in the antero-lateral aspect of the chest permits selection of the additional rib for resection. Through and through drainage is then instituted. A third button hole opening may be made in the fourth or fifth interspace in the mid-clavicular line for a small irrigation tube through which Carrel-Dakin solution may be injected to flow down over the infected pleura. Ingenious valve devises have been invented to permit escape of pus and exclude air, but are generally deficient from drainage standpoint. If open thoracotomy is properly indicated such provision is unnecessary and copious dry dressings without valve aids are preferable. The danger of a foreign body such as drainage tube or gauze lost in the thoracic cavity cannot be too forcibly stressed. Such an accident has frequently occurred with a resultant chronic cavity and sinus until it is removed. The recovery of such a foreign body is sometimes extremely difficult and dangerous. Care should be taken to insure that all tubes and dressings are adequately secured from entering the thorax by large clasp pins or sutures. The time to operate by open thoracotomy is an important consideration. Testing the vital capacity by a Krough spirometer and observance of the mathematical rule formulated by Graham will enable the operator to avoid open thoracotomy when the vital capacity is too greatly impaired. From a clinical standpoint a blue dyspnoea is dangerous and a white dyspnoea safe and a thin greenish pus is a contraindication while a thick creamy pus usually means that open thoracotomy may be safely performed.

Sterilization of the cavity: The earlier the invading organism can be entirely eradicated from the empyema cavity and the pleura, the sooner will further pus formation be stopped and the less will be the thickening of the pleura and encapsulation of the lung. Until recently the killing of the invading organism was left entirely to nature, with the exception of the elimination provided by drainage. Efforts have been made to hasten the sterilization of the cavity by introduction of antiseptic solutions into the pleural cavity without noteworthy success until the World war furnished us with an agent that seems ideal and is apparently a decided improvement over other methods.

Dakin's solution (0.5) per cent neutral sodium hypochloride not only has proved its efficiency as a sterilizing agent in empyema cavities, but it is also unanimously agreed that it is a solvent of necrotic tissue and fibrinous exudate. The thick enveloping and compressing capsule of fibrin and necrotic tissue that hinders expansion of the lung and obliteration of the cavity is removed by Dakin irrigation. Nature's effort combined with the bactericidal action of Dakin solution are greatly aided by closure of the cavity. The frequency with which empyema recurs after apparent recovery is evidence of the desirability of using the best germicidal agent to insure sterilization. The reports of experience in various camps were unanimous in their conclusions that Dakin's solution is effective in the rapid accomplishment of sterilization.

The irrigating solution may be used in conjunction with any of the forms of drainage. With simple syringe aspiration after as much pus is withdrawn as seems desirable repeated injections and aspirations of Dakin's solution may be done until the pus is well diluted if not all is removed or until it returns clear if the entire pus is withdrawn.

A syringe full of Dakin's solution may be left in the pleura until the next aspiration and irrigation.

The same procedure may be followed and is usually employed in connection with the closed drainage system by aspirating and irrigating through the rubber tube or catheter always avoiding entrance of air by occluding the tube when the syringe is disconnected.

In open thoracotomies irrigation may likewise be carried out through the drainage tube or a high puncture wound (fourth or fifth interspace) in the midclavicular line may be made to admit a small tube through which Dakin solution is injected and permitted to flow down over the effected pleura to emerge through the larger and lower drain.

With the first injection or until it is known that no large communication with a bronchus exists caution should be used to insure that no large volume of Dakin's solution is suddenly thrown into the cavity some of which may gain entrance to the bronchi and trachea and cause severe coughing and choking. Even with a communication, however, Dakin's solution may be used in small quantities under little pressure. The amount of fluid injected must vary with the size of the cavity. Twenty or thirty cc repeatedly injected and withdrawn after the pus has been removed may be sufficient. The report of the empyema commission at Camp Lee stressed the necessity of injecting an adequate amount to reach all parts of the cavity and stated that an amount equal to one-half of the estimated size of the cavity should be used, but not to exceed 200 cc. Frequency of irrigation in the beginning may be as often as every hour, but the intervals are lengthened as disinfection progresses.

The time to discontinue irrigation and to remove the tubes requires careful judgment. The character of the fluid changes from frank pus to thin serous fluid, then a viscid glairy translucent material is obtained and finally the outflowing return is clear. At this time the cavity itself is usually substantially sterile and may be checked by bacteriological examination. Cavities that had not been treated by Dakin irrigation were found to be followed by recurrence of empyema not infrequently, while such relapse was rare in the irrigated cases.

Obliteration of the cavity: Sterilization of the cavity and obliteration of it are complemental to each other. The cavity cannot be permanently obliterated until sterilization has been effected and likewise sterilization is more easily accomplished if the cavity is simultaneously undergoing obliteration. The accomplishment of either facilitates the other. But even if sterilization has been substantially brought about a cavity may remain which predisposes to recurrence or prolongation of infection. Therefore, early and persistent attention to the means of facilitating the obliteration of the cavity are essential.

Since the chest wall is rigid the obliteration of the cavity involves a compensating change in the three remaining structures which are more or less flexible, namely the mediastinum, the diaphragm and the lung. The mediastinum may have been rendered rigid by inflammatory thickening and adhesions or it may retain its mobility to some extent and participate in the closure of the cavity. The diaphragm will ascend on the diseased side unless held down by adhesions to the parietal wall. In the majority of cases, however, the mediastinum and diaphragm are quite rigid from inflammatory thickening and the chief source of cavity obliteration is the reexpanding lung.

Serious hindrances to complete obliteration of the cavity must rest with the lung itself since unless prevented by compression, contraction, loss of substance or obstruction to ingress of air the lung capacity is sufficient to fill the thoracic cavity.

MacCallum has enumerated the lesions involving the lung which hinder its adequate expansion as follows:

1. Loss of lung substance by necrosis.
2. Obstruction of bronchioles (mucus).
3. Fibrosis and contraction.
4. Compression by fibrinous or fibrous capsule.

Autopsy findings reveal that in some of the pneumonias associated with empyema there is widespread necrosis and loss of lung substance. There may be also occlusion of the bronchioles with mucous resulting in extensive atelectatic areas which do not participate at least then in the reexpanding and hypertrophying process.

Subcortical or central areas of necrosis may result in localized areas of fibrosis or there may be generalized fibrosis exerting a contracting influence on the collapsed lung. These factors just enumerated of loss of substance, occlusion of bronchioles and fibrosis cannot be obviated and can be only partially overcome by increased intrapulmonary pressure through the use of blowing exercises. Seldom are the intrapulmonary lesions just mentioned of serious import in preventing cavity obliteration. By far the most common cause of failure of cavity obliteration is the influence of the compressing or enclosing envelope of thick fibrinous exudate that covers the surface of the lung. This envelope which is always fibrinous at first may later become organized and consist of a dense fibrous capsule. The most common effective hindrance to reëxpansion of the lung is this corset-like membrane produced by the inflammatory exudate. The longer the inflammation exists the more thick and resisting will be the confining capsule.

Therefore, early and persistant efforts to minimize or remove this exudate favors obliteration of the cavity. Fortunately the World war gave us an agent which it is unanimously agreed has a solvent action on the fibrinous exudate. Dakin's solution has a two-fold action of sterilizing the cavity and dissolving the enveloping membrane. As a rule the decorticating action of Dakin solution is a gradual process but not uncommonly whole strips of membrane may come away in the irrigating fluid. Graham describes one case in which by means of Dakin's solution a large mass of thick fibrinous membrane came away and obliteration of the cavity quickly followed this incident. The empyema commission at Camp Lee reports the following: "The increased expansion of the lung following the use of Dakin's solution leads to the hope that extensive intrathoracic operations such as decortication of the lung may in most cases prove unnecessary. Such procedures should be undertaken only after most prolonged efforts to obtain expansion of the lung have failed."

The use of the time honored Wolff's bottles to increase intra-pulmonary pressure is an advantage particularly in the long standing cases with fibrous and atelectatic areas. John W. Snyder of Rochester has combined with the Wolff bottle a suction apparatus to be applied over the sinus leading to the empyema cavity. With increased intra-pulmonary pressure and suction toward the cavity ideal physical principles for expansion are obtained. It may bear repeating, however, that the dissolving of the fibrinous membrane and minimizing its formation by irrigation with Dakin's solution if started early and persisted in thoroughly will usually obviate the necessity of mechanical apparatus or decorticating operations.

RECAPITULATION ON MANAGEMENT OF EMPYEMA

1. The removal of pus is not the only necessity.

2. Maintenance of the nutrition is of paramount importance.

3. Circulatory competency should be secured by administration of Digitalis if below the safe level.

4. An accurate diagnosis of site and extent of empyema as well as pressure of and stage of associated pathology particularly pneumonia should be made before operative treatment is begun.

5. Early open thoracotomy should never be done in influenzal type of empyema or if empyema is an early complication of pneumonia.

6. Drainage by a closed method combined with irrigation with Dakin's solution is now advocated by most authors. This is an urgent requirement if empyema is of influenzal origin.

7. Simple open thoracotomy without special irrigation or suction apparatus is safe and effective only in the cases when empyema is discovered as a late sequel of pneumonia.

STUDIES IN MORPHOLOGICAL HAEMATOLOGY

1. Basophilic Granulated Substance in Erythrocytes.

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Clinical diagnosis based on morphological and chemical changes in the blood has in recent years assumed such proportion and importance, that the average practitioner can no longer dispense with a knowledge of the leading data and principles which modern hematologists have agreed upon as definitely settled. With the literature on blood and blood forming organs enormous in extent, diversified in character, frequently irksomely controversial, physicians have only too frequently relied on the old stereotyped evaluation of the blood picture as given in the early nineties. Current hematological studies were regarded as of purely academic interest. Their value could never extend beyond the class room.

How erroneous this attitude was, has recently been demonstrated by the startling success of liver treatment in pernicious anemia as inaugurated by Minot and Murphy (1926). Their discovery forcibly and unexpectedly brought home the practical value and primary importance of a knowledge of the morphological changes occurring in the blood stream and blood forming organs. Splenectomy in thrombocytopenia, beneficial radium and x-ray treatment in cases of chronic leukemia, are further reasons for a renewed interest in hematological studies. More and more the conviction is growing that the circulating blood does reflect the condition of the human body organically and functionally. Whilst disturbances of the latter type are usually slight and of transitory character, those of the former are deep seated and only too frequently the cause of an untimely death. With the system exposed to a variety of possible disturbances of erythropoietic, myelo-or lymphoblastic, histiocytic, megakaryocytic (blood platelet) nature, the term "blood disease" is symptomatically again justifiable and the old Latin proverb *"Sanguis vita vitae"* wins de novo a well merited recognition.

Far be it from the scope of this present series of papers to give a detailed presentation of the accumulated data on modern hematology. A work of text book dimentions would be necessary for such an undertaking. In its stead, an attempt will be made to give in mere outline all such morphological studies as of immediate value for a convincing clinical diagnosis.

As a preliminary and of fundamental importance is an acquaintance with the available staining methods, both as regards sections and blood films. For a routine determination of blood count the ordinary Wright's stain is both practical and time saving. If, however, finer morphological details in cell structure are wanted, the panchromatic method of Pappenheim is indispensable. This staining is best accomplished by way of the May-Grünwald-Giemsa combination, the German Grübler product giving the most reliable results. If Grünwald is unobtainable, the Jenner stain may be substituted. The following procedure should be adhered to:

1. Dry smears and completely cover with 10-15 drops of May-Grunwald (or Jenner) for 3 min.
2. Add equal quantity of distilled H_2O, 1 min.
3. Pour off and recover with diluted Giemsa (20 cc. H_2O plus 30 drops of stock Giemsa) 12-15 min.
4. Pour off and wash for 30 seconds in dist. H_2O.
5. Dry with filter paper.

For an absolutely accurate differential count a drop of blood should always be placed between two cover glasses.

Vital staining of reticulocytes—A requisite in pernicious anemia. With a glass rod a few drops of a sat. alcohol (100%) solution of brilliant cresyl blue is spread over a warmed cover slip and then left to dry. Many of these made be made, for the stain does not deteriorate. When wanted, the stained surface of the cover slip is placed on the drop of blood previously placed on a clean slide. After 30 minutes when vital staining is complete, the reticulocytes give a bluish tint in contrast to the pink staining normal red cells. In counting a ratio of reticulocytes per 100 reds will give the percentage, whilst the total of reticulocytes can readily be deduced if compared with the total of red corpuscles.

COUNTING OF BLOOD PLATELETS

Since these tiny structures run together in ordinary dry smears, a 14% solution of magnesium sulphate is used to prevent them from doing so. A drop of the solution is placed on the skin previously rendered hyperaemic. With the prick of a needle blood is then left to ooze out into the drop. When completely mixed, the ordinary technique of making blood films is resumed. With a minimal count of 2,000 red corpuscles, the ratio of platelets per red cell is ascertained. Hemocytometric calculation will give the number of reds per cm; from both results the number of platelets per cm. may then be deduced. Normally they should average 300,000 per cm.

SECTION STAINING

Sectioned material of hematopoietic tissue may best be studied when stained in Maximow's hematoxylin, azur-eosin combination.

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*This tendency has recently been objected to by Ferrata (1928), according to whom the term is misleading, since in the formation of the structures it is not a question of a pre-existing protoplasmic reticulum, but a reaction phenomenon produced by the vital dye on the plasma content of the erythrocyte (Zoja, 1910).

1. Stain sections over night in an extremely diluted sol. (wine color) of Delafield's hematoxylin.
2. Wash once in dist. H_2O then leave sections in the latter from 8-12 hours.
3. Place in azur-eosin mixture over night.
4. Differentiate in 95% alcohol until no stain clouds leave tissue. Transfer to second 95% alcohol for a few seconds.
5. Dehydrate in absol. alc. I and II. Clear in xylol I and II. Mount in damar.

Stock solutions: azur II, 1-1000% eosin (W. G. Grubler) 1:1000%.

Proportions: azur 9 cc., eosin, 16 cc., H_2O 100 cc.

Whenever possible, fix in Zenkers, as formalin fixed material gives poorer results.

BASOPHILIC GRANULATED SUBSTANCE OF ERYTHROCYTES

In physiological and pathological regenerations of the erythropoietic mechanism, three morphologically distinct phenomena are to be noted, viz.: Substantia-granulosa-filimentosa (reticulocytes), polychromatophilia, and basophilic stippling or punctate basophilia. Our present knowledge of these three formations may briefly be outlined as follows.

Substantia-granulosa-filimentosa: This old term signifying peculiarly contoured, vital staining erythrocyte inclusions, is gradually being replaced by the term reticulocyte or reticulated cell.*

The substance constituting the reticulation occurs in the form of granules, fine rods and filaments. Usually disposed in rosette or acorn fashion, the substance frequently forms a network of fine strands. Undetectable with ordinary Wright's or the various modifications of Romanowsky, the reticulated substance comes to view solely by use of vital stains as cresyl blue, toluidin blue, methylene blue, Janus green. Normally present in circulating erythrocytes in a ratio of 0.1 to 2%, the substance is of frequent occurrence in erythrocytes and erythroblasts of normal bone marrow (Ferrata), attains a ratio of 30-40% in new born and foetal blood (Ferrata), and presents varying quantitative proportions in experimentally produced and natural anemias (Naegeli). Regarding the latter, in hemolytic icterus Naegeli observed a 30% ratio; in pernicious anemia, after liver treatment, Heck (1929) obtained counts of 20-30% during periods of optimal bone marrow reaction, whilst Held and Goldbloom (1928) gave a 40% ratio as an average for all anemias, especially those due to hemorrhage, malaria and carcinoma of bone marrow.

As a result of these observations, practically all modern hematologists are agreed that reticulocytes represent autogenetic young red cells in the sense that the reticulated substance represents a remaining undifferentiated cytoplasmic basophilic material agglutinated or brought together by the vital stain. (Pappenheim, De Falco, Ferrata, Heck, (1929). Although a specific preexisting reticulum has to-date not been satisfactorily established, the structures are obviously a most reliable indication of physiological regeneration, i. e., the first sign of increased erythropoiesis. Any clinical examination of the blood purporting to be complete, must, therefore, inclue at least a few vitally stained films, some of which may then for purposes of orientation be counterstained with ordinary Giemsa.

The recently ascertained marked increase of reticulocytes during the first days after commencement of liver treatment in pernicious anemia, their continued occurence during the convalescent periods, definitely disestablishes Rosin's and Biebergeil's (1904) original contention of the degenerative character of the vital granules, and corroborates Foa's (1900) experimentally obtained conclusion that they are young red cells.

Cesaris-Demel's (1906) observation that with cresyl blue the vital stainable substance appears in two morphologically distinct patterns, viz., a substantia A, (orthochromatic blue threads), and a substantia B, (metachromatic red-violet granules) received but little additional attention.

Ferrata, admitting the distinction, noted that the metachromatic substance occurs as one or two granules, frequently distributed in diplococcus fashion at the periphery of the cell. Their presence in normal adult bone marrow, in embryonic erythroblasts, normoblasts and megaloblasts (1912), together with the fact that they are of frequent occurrence in nucleated red cells of lower vertebrates, determined, Ferrata from the start to regard both substances as significant of the youthfulness of red cells. This observation was variously substantiated by Pappenheim, Maximow, Sabrazes, Hertz, Schilling-Torgau, Naegeli and others.

Naegeli states that the reticulated substance when minimal has a fine granular marginal distribution; during marked regeneration the granules are coarser and more abundantly present. According to Heck (1929) presence of reticulocytes enables a differentiation of blood diseases, the structures being increased in purpura hemorrhagica, absent or extremely sparse in aplastic anemia. Invariably hemolytic jaundice shows a marked increase.

POLYCHROMATOPHILIA

Normally acidophilic in staining reaction, erythrocyte cytoplasm may under certain conditions assume a varying quantity of basic stain, thereby presenting a mixed tone structure. Frequently distinctly basophilic in certain regions, acidophilic in others, the reaction is generally of a uniform deep blue or light blue shade. The phenomenon is best observable in methylene-blue-eosin combinations, especially, that of May-Grünwald or Giemsa.

As modernly interpreted, polychromatophilia is a sign of cell immaturity, the basic staining substance being a remnant of primordial cytoplasmic basophilia existent in the progenitors of the red series (Ferrata). Normal adult bone marrow, accordingly, carries a large percentage of both nucleated and non-nucleated polychromatic structures. The latter are exceedingly numerous in embryonic blood and hematopoietic tissue, the liver at certain stages exhibiting only nucleated polychromatophilic reds (Naegeli, Ferrata).

Extremely sparse in normal adult blood, polychromatophilic red cells appear in strikingly varying, at times very high quantitative proportions during organic disturbances with physiological regeneration, notably pernicious anemia and aplastic anemias, whilst other diseases may show them in lesser proportions. Their appearance during disease is due to an abnormally activated erythropoiesis, with resultant delivery into the blood stream of immature or "unripe" red cells.

Numerous observations of the past seem to favor the contention that polychromatophilia is intimately related with the reticulated substance, in short, that both are different manifestations of the same phenomenon. With Schilling-Torgau, Luzzato, De Falco and others maintaining intergrade stages between the two, Heck (1929) recently finds that, numerically, polychromatophilic cells are as abundant as reticulocytes. Whilst ordinary Wright's reveals pronounced polychromatophilia, small proportions of the latter are detectable only by use of vital stains. With ultra-violet, according to Schmidt (1902), polychromatophilia comes to view in the form of numerous fine granules.

Most authors look upon polychromatophilic cells as poor in H-b content. Naegeli and Hirschfeld, however, state that this need not necessarily be the case. Blood of embryo and that of various anemias, especially hemolytic, although densely populated with polychromatophilic red cells, show not only relative high H-b, but also a hightened color index. Pathologically, especially in severe anemias, there occurs in addition to ordinary blue tinted polychrompatophilia, a varying proportion of deep red staining individuals. These Naegeli groups under the term of azurophilic polychromatophilia, the azur tint being due not to a crumbling process of erythroblast nuclei (Ferrata), but to a physico-chemical alteration of the ordinary type of polychromatophilia.

Of historical interest are the degeneration theories of Gabritschewski (1891) (Polychromatophilic degeneration), the anemic degeneration of Ehrlich (by way of necrobiotic coagulation of protoplasm). Of similar value is Weidenreich's contention that polychromatophilia represents simply a more pronounced staining of the basophilic cell membrane, due to diminished H-b content, and Blumenthal and Morawitz (1907) contention of a nuclear origin of polychromatophilia.

BASOPHILIC STIPPLING, PUNCTATE BASOPHILIA

The occurrence of this type of basophilic granules in the human erythrocyte Ehrlich in 1880 first noted in anemia. With the establishment of its characteristic frequency in pernicious anemia by Askanazy (1893), various workers as Engel, Sabrazes, Naegeli, Ferrata, Grawitz and others have reported it as a frequent phenomenon in chlorosis, pernicious anemia, secondary anemias, plumbism, experimental post-hemorrhagic anemias, in embryonic blood and blood-forming organs and in the new born.

For this reason, practically all modern hematologists are agreed that basophilic stippling is a distinct sign of pathological regeneration in the sense, that there is a return to the embryonic mechanism of cell maturation, the stippling representing a residual quota of primitive basic cytoplasm subsequently thrown down in the form of granules.

In Giemsa preparations the granules stain blue, irrespective whether the cytoplasm be orthochromatic or polychromatic, the cell body nucleated or non-nucleated. Prevailingly round and of uniform size, the granules are occasionally angular and varied in dimention. Their distribution may be peripheral, solely peri-nuclear, mosaic-like uniform or markedly irregular. That the structures are not artefacts, but represent pre-existent cell inclusions, is clear from the fact that they are visible in the unstained condition (Ferrata, Boselli, 1910), may be seen with dark field illumination (Diefrich (1921) and Schilling), as well as with ultra-violet (Michaelis). With the vital dyes methylene blue and thionin Ferrata and Boselli (1910) have shown that in the same cell the basophil stippling stains blue, whilst the substantia granulosa-filimentosa stains red.

Normally absent in the erythrocytes of circulating blood and bone marrow, the punctuation may at times be a temporary physiological phenomenon, as instanced by Naegeli's self experienced finding of the structures after a blood sausage diet. Opposed to this sparsity in the normal adult, the erythrocytes of the new born may occasionally exhibit the granulation (Konig), whilst those of the embryo carry high ratios, in certain stages reaching 70% (Naegeli). The embryonic occurrence of the stippling, first noted by Engel, has subsequently been corroborated by Bloch, Askanazy, Naegeli, Ferrata, Negreiros-Rinaldi, the last three listed, maintaining a conspicuous absence of the granules in megaloblasts or primitive erythroblasts, an equally conspicuous presence of the granules in the erythroblasts and erythrocytes of the definite series, especially those of the liver. Towards the end of intra-uterine life, the punctation is usually absent, while polychromatophilia persists (Naegeli, 1908).

Plumbism: Basophilic punctation as a characteristic phenomenon in chronic plumbism, was first noted and described by Behrend (1899) and Grawitz. In an attempt to determine the origin of the granules, it was subsequently experimentally produced by lead poisoning and pyronin injections in normoblasts and normocytes of bone marrow, as well as in the circulating red cells of various higher mammals (Naegeli, Sabrazes, Blumenthal and Morawitz, Ferrata, Reggiani). Finally, after many unsuccessful attempts with lead injections to produce the phenomenon in the permanently nucleated red cells of the lower vertebrates (Meyer, Morawitz, Ferrata), Sabrazes produced it in doves, De Falco (1915) obtained the reaction in the woodpecker, chicken and in forms as low as the turtle. Negreiros-Rinaldi (1916) duplicated the phenomenon in frogs.

Particularly with lead injections, it was noted that small doses produced the appearance of the granules, whilst large doses stopped their output (Sabrazes, Naegeli), simulating in this respect certain clinical observations of temporary massive production in pernicious anemia.

Characteristic for chronic plumbism, acute cases and fatal stages of the disease show no punctation or very little of it (Sabrazes, Naegeli). Though of pronounced occurrence in pernicious anemia and other severe anemias, basophilic stippling may at certain stages be extremely sparse, at times entirely lacking. Massive proportions are usually contemporary with amelioration of patient (Naegeli), liver diet (Heck, 1929). Iron therapy showed, two to three days after, a marked increase of the granules plus polychromatophilia (Naegeli).

Origin and nature of granules: A nuclear origin from chromatin (Engel, Blumenthal and Morawitz, Lazarus), was soon disparaged by the distinct difference of tinctorial reaction obtainable especially with Giemsa, the granules staining blue, the nucleus and nuclear remains (Jolly body) staining red or violet (Ferrata, Pappenheim, Grawitz, Weidenreich). A similar marked tinctorial difference may be obtained with the specific nuclear stain mythelgreen-pyronin (Pappenheim).

A paraplastic origin of the granules, i. e., from the blue staining parachromatin of nucleus (Pappenheim, Ferrata, König, Alexieff) was regarded as untenable by Negreiros-Rinaldi (1916) and subsequently denied by Ferrata himself (1918). The occurrence of the stippling in absolutely intact red corpuscles of lower vertebrates during experimentally produced lead and pyronin poisoning seems definitely to have disestablished a nuclear origin of the granules.

Degeneration: A derivation from degenerating cytoplasm was contended for by Grawitz (1889) and Weidenreich. The former regarded the granules as degeneration products of a specific blood poison working on the circulating cells as experimentally demonstrable with lead injections. The latter interpreted the granules as special alterations of oxyphilic protoplasm, notably that of a supposedly existent peripheral membrane.

Regeneration: Ever since 1906 the regeneration theory has strikingly prevailed, the result being that with the exception of Naegeli, opinion has definitely settled for a cytoplasmic origin of the granules. That the cells bearing these basic granules represent immature, i. e., young red corpuscles, has convincingly been established by the observations already recorded. Briefly summarized they are: (a) the widespread and marked occurrence of the stippling in embryonic blood and blood-forming organs (70%), (b) appearance of the structures in severe anemias, after hemorrhage, in experimental anemias and especially in lead poisoning.

The cytoplasmic origin of the granules is favored by: (a) the non-plausable nuclear origin of the granules evidenced by their occurrence in the permanently nucleated red cells of lower vertebrates and erythroblasts of anemias, (b) by the diversity of staining reaction of granules versus nucleus or nuclear remains (Jolly body), (c) by the substantial genetic relationship existing between polychromatophilia and basophilic punctation.

With Pappenheim (1909-19) maintaining an identity of the granules with polychromatophilia in the sense that they are but coagulation products of the latter, Cesaris-Demel (1907) deriving the stippling from his substantia A and B, De Falco (1915) recording intermediate stages between lymphoid protoplasm, polychromatophilia and basophilic stippling in the nucleated reds of lower vertebrates, Schilling (1921) identifying the basic network with the basic granulation, the conclusion given by Pappenheim, De Falco and Ferrata (1918) seems most plausible.

Briefly stated, their opinion . . now nearly unanimously accepted . . . is as follows: The three morphologically distinct structures, substantia granulosa filimentosa (reticulated substance), polychromatophilia and basophilic stippling are three different manifestations of the same phenomenon, i. e., instances of retained undifferentiated cytoplasmic basophilic material of immature ontogenetic forstages of the red cell series (erythroblasts). The vitally staining granules (reticulocytes) and basophilic stippling represent agglomerations of the basophilic substance in the form of a network or granules, polychromatophilia on the other hand, the same substance diffusely distributed. Presence of stippling is, therefore, to be interpreted as a distinct pathological regeneration, the causative factor of which is a return to an embryonic mechanism of red cell production. Presence of reticulocytes and polychromatophilia indicates a simple physiological regeneration, since the two structures are to be encountered in normal erythrocyte maturation.

Naegeli, while admitting the pathological regeneration significance of the stippling, is practically alone in disparaging a cytoplasmic genesis of the granules and favoring a nuclear origin by way of karyorrhexis (nuclein). His main reason for questioning a cytoplasmic origin of the granules is his observation that in late embryos, polychromatophilia is most abundant, but stippling entirely lacking . . . a contention denied by Pappenheim (1919), who claimed that there is no polychromatophilia without an accompanying basophilic punctation.

Bloch's (1901) observations of the stippling in mitotically dividing erythroblasts in severe anemias, Jolly's (1907) finding of the granules in intact nucleated red cells are according to Jolly (1923) convincing arguments for their cytoplasmic origin. The genetic relationship of punctation with polychromatophilia is accepted by Jolly and has since been adopted by Ferrata (1918) and even Sabrazes (1920).

Concluding this topic, it may be noted that basophilic stippling may occur in association with a Jolly body, Cabot ring body, Ehrlich-Heinz body, the nature of which will be described in a subsequent paper.

A complete bibliography on the red corpuscles will be given later.

THE MEDICAL PROFESSION, PUBLIC HEALTH, AND THE PUBLIC*

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We have no knowledge as to just when man first began devising ways and means for the treatment of the ailments and injuries of his fellow man; that is, we do not know just when the practice of medicine began, for primitive man's activities and achievements, if he had any, have been blotted out by the passing of the ages. The only records pertaining to that distant epoch are those disclosed in the fossils. History can only begin with the written record. All prior knowledge, if it can be designated as such, has come to us through the efforts of the archeologist with his pick and shovel and an interpretation of his findings.

The earliest code of laws we have knowledge of at the present time is that of Hammurabi, first king of Babylon, which dates back some two thousand five hundred years B. C. Hammurabi had his laws engraved on tablets of stone, claiming them of divine origin and given him by the god Shuman. The Babylonians made noted advancement toward civilization, had a written language, had made progress in the arts and sciences, had acquired sufficient knowledge of astronomy to differentiate between the planets and fixed stars, and had arranged a calendar of seven days. They had a remarkable system of irrigation, making possible advancement in agriculture. In that civilization is found the first record that the healing art occupied a place in the body politic.

Hammurabi's code provided a fee which the doctor could charge, described and penalized malpractice. The penalties against the doctor for the violation of the code were severe in the extreme, such as cutting off a hand or punching out an eye. No effort seems to have been put forth for prevention of disease, the physicians giving their entire energy seemingly to the efforts to treat and cure disease. The ancients, being steeped in superstition, were given to regard all human ailments due to supernatural causes; therefore, as might have been expected, the treatment of the sick and injured was closely allied with religious rites and ceremonies. Practice of the healing art was, consequently, to a large extent in the hands of the priesthood. The treatment usually resorted to was incantation, charms and other sources of witchcraft. When it is recalled that those primitive people regarded human ailments with such superstitious awe, believing the cause to be supernatural, it would not be reasonable to expect that man would attempt to cope with the supernatural in attempts at prevention. All that could be hoped for was the treatment of the individual case by the practitioner, by the use of such means of sorcery or such other measures as were likely to appease the wrath of the gods.

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*Read before the Lancaster County Medical Society.

Some fifteen hundred years B. C., Moses, the Law-giver, handed out through the priesthood some quite wholesome, hygienic and sanitary regulations for the observance of his people, the Hebrews. Those might well be designated as public health measures. Greek mythology tells of how Esculapius, the god of medicine, had two daughters, Panacea and Hygeia, the former giving her time to the gathering of roots and herbs, which her father used in making infusions and decoctions for the treatment of his patients. Hygeia occupied herself in teaching the people how to keep well. Here, then, seems an early effort in public health.

Hippocrates, some four hundred years B. C., in a treatise on air, waters, and places, seems to have been endeavoring to teach public health. The growth or improved methods in the practice of medicine has been of exceeding slow growth. Two thousand years elapsed between the time of Hammurabi, when the practice of medicine was a definitely recognized part of the public structure, and the coming of Hippocrates, and yet in that stretch of twenty centuries, but little, if any advancement was had in the treatment of the sick and injured. Hippocrates found the practice largely in the hands of the priesthood, or others equally actuated by superstition, the therapeutics in vogue still consisting largely of amulets, incantations, charms, and other forms of witchcraft. Fortunately for medicine and the future good of suffering humanity, Hippocrates proved to be a man of a logical mind, and early recognized and taught that no matter how disease might be regarded from a religious point of view, it must be recognized and treated as subject to natural law. Such logical and practical attitude relative to disease and its treatment, coupled with his practice and teaching, started the real evolution of medicine, which, though seemingly very slow, eventually evolved from a crude, superstitious practice to, as now found, one of the most educated and scientific professions known to the foremost civilization the world has yet produced.

While the growth and development of medicine from a primitive, superstitious business to a scientific profession have been slow, requiring the passing of many centuries, yet after all they have kept abreast of the educational advancement of the times. A most signal impetus was given to medical advancement early in the Seventeenth Century, when William Harvey proclaimed the circulation of the blood. The progress made in medicine during the last half of the Nineteenth Century and the first quarter of the present century has totally eclipsed all previous advancement.

We may marvel somewhat at the slow progress made by medicine during the four thousand five hundred years since the time of Hammurabi, where first record is had of the healing art occupying a definite status in the social structure, and yet slow as it has been, slower still has been action for public health. This is explainable when it is recalled that during those many centuries the medical profession exerted itself almost entirely to the idea of treatment and cure of disease rather than cause and prevention. Some sporadic efforts, providing for hygienic and sanitary measures, as have already been pointed out, were had and should be mentioned; the action of ancient Rome in its construction of an immense aqueduct to bring the water from the distant hills that the people might have water, not only adequate in quantity, but pure in quality. Coupled with the great sewer, ruins of which may be seen to this day, furnishes evidence that even in that distant time some consideration was had as to public health. Notice, too, should be made of the fact that in medieval times, especially toward the closing centuries of the dark ages, various cities and some principalities enacted ordinances and laws which had the semblance of dealing in matters of public health. About the middle of the Fourteenth Century, the Venitian Government enacted ship quarantine in an effort to stay the ravages of plague. For centuries such practice prevailed in various countries. It was often harsh and destructive in the extreme, and frequently served little or no purpose. Here it may be recalled that all down through the past the public in time of stress and disaster has ever turned to the profession for guidance.

An early step in preventive medicine was that of smallpox inoculation as a preventive of smallpox. It seems to have been an established custom in China and other Asiatic countries at an early date, but did not gain foothold in England until early in the Eighteenth Century, where it was introduced by Lady Montague, the wife of the English ambassador to Turkey. It was bitterly opposed for several years, but later became popular and was extensively practiced up to 1798, when Jenner made known his discovery of cowpox vaccination. Of course, smallpox inoculation only immunized by actually giving the individual smallpox, and was in no sense a preventive. It modified and rendered the disease less severe, hence less fatal. Jenner's vaccination, while accidentally discovered, may well be regarded as the first great step in preventive medicine and one of the greatest boons conferred upon humanity by the medical profession, for it not only made possible the complete eradication of the dread epidemics of smallpox, if vaccination was rigidly adhered to, but it gave stimulus and encouragement to original investigation and research that eventually brought about anesthesia, antisepsis, and asepsis, all of which have given us modern surgery with the inestimable benefits resulting therefrom. It encouraged research which led to the discovery of the nature and cause of disease, the establishment of the germ theory, making possible rational methods of immunization and prevention, so that no longer do we hear of the great epidemic scourges of plague, Asiatic cholera and yellow fever that for so many centuries held sway, striking death and terror in their paths.

Research by disclosing the cause of disease has also made possible the control of other diseases such as diphtheria, scarlet fever, typhus, typhoid, and other diseases. The puny efforts at public health that may be observed from time to time, back over the centuries, were naturally due to an aroused public conscience, but such arousing was due to the influence of the medical profession, for as already indicated, the public gets its inspiration as to disease and its prevention primarily from the profession.

It is not claiming too much when it is claimed that virtually all worthwhile health movements have first emanated from the medical profession. Practically all legislation in the interests of public health has been conceived in the medical mind, promulgated by medical men, and crystallized into law by the efforts of organized medicine. Laws for the purpose of requiring persons to meet certain educational tests and qualifications before engaging in the practice of the healing art are public health measures, as they are primarily for the purpose of protecting the public against unqualified practitioners, quacks, and charlatans.

It is true that organized medicine has not always been successful in preventive laws for the licensure of cult practice, but here again is but additional evidence to prove the position taken in this article; namely, that the public has ever looked to the practitioners of the healing art for leadership and guidance, regardless as to whether the healers were of ancient witchcraft, disciples of Hippocrates, or the Twentieth Century cults. Considerable attention has been called to the superstitions of the ancients and those of medieval times, as to the nature, cause and treatment of disease, yet here we find ourselves well into Twentieth Century culture and education and all that should be expected to drive superstition entirely from the human mind; that this is more expectant than real is attested to by the fact that healing cults with formidable following have sprung up, as it were, almost in a night, like Jonah's gourd; that such groups acquire sufficient following and influence to gain favorable legislation is probably due to the primitive superstition relative to disease that still lurks in many human minds. The mere mention of Eddyism, Dowieism, Palmerism, and Abramsism should be sufficient confirmation of this statement. That the minds of some of the profession are not entirely divested of the former superstitions is indicated by the manner in which they took up Abrams' electronic theory. Whether or not scientific medicine will ever become so efficient and alluring as to drive the ghosts of superstition from the public mind remains for future generations to disclose. It is encouraging, however, to note the advancement made in the public conscience of recent years as becomes manifest in the enactment of pure-food, drug, and narcotic laws, both national and state. Such advancement as has been made, relative to foods, drugs, narcotics, and nostrums, has been due to the arousing of the public conscience through the efforts of organized medicine, speaking through its spokesmen and official periodicals.

Public health is really of modern origin, for as has been noted, while occasional action pointed in the direction of public health from time to time, yet no really organized, systematic, continuous effort was had until very recently.

An act was passed by Congress a little over a century and a quarter ago creating the United States Marine Hospital Service, but that was for the benefit of those in the service. Some subsequent acts were had from time to time, broadening the government's activities, so that by 1873 Congress passed an act amalgamating all previous acts, thus creating what is now known as the United States Public Health Service. This service, while being only a little over fifty years old, has developed into what is commonly recognized as the greatest public health service in the world.

It was not until after the Civil War that cities of this country began to create boards of health. Soon, thereafter, the states, one after another, enacted laws providing for boards of health. At first such health boards seemed to have busied themselves mainly in matters of sanitation and restrictive measures against the spread of disease. Little or no attention was given to the qualifications of its practitioners. Reference has already been made to this as a public measure of real importance. It was not until the closing years of the past century and the opening years of the present that laws were enacted by the various states to inquire into and pass upon the qualifications of its practitioners, in addition to broadening the acts providing for more adequate public health service. It is now so generally an accepted proposition that one of the important functions of government is the protection and promotion of the health of its people that no argument need be offered in its support.

It would then seem to logically follow that sufficient funds should be provided by the government to give adequate health service to its people. That it often does not do this is a matter of common knowledge. A case in point: In the early part of this century, the federal government became exceedingly active in the conservation of its natural resources, such as public lands, mineral lands, forestry, water, etc. Soon conservation became a slogan and has so continued. Later it was broadened to take in the conservation of wild game, and was later applied to domestic animals. An effort was later made to have conservation apply to the lives and health especially of women and children. It is a matter of common knowledge that for a few years the federal government did extend federal aid in a limited way to the several states for the promotion of maternal and child hygiene, but even this has been withdrawn to take effect at the close of the present fiscal year, next June. Yet, observe that while this is happening, the government is still appropriating millions upon millions for the conservation of the natural resources and promotion of animal husbandry, the production of serums for black-leg in cattle and swine-plague in hogs, extending it to the destruction of blight in plant life. These things, no doubt, are well worth consideration, and I would have no fault to find, did they not take precedence of the mothers and children of the land.

Another instance: The federal government goes the states fifty-fifty in the making of good roads. Are good roads paramount to the health and lives of its people? It seems to be so regarded. Good roads are desirable; so is public health. If the government helps in the former, why should it not help in the latter?

Regardless as to what we may think or believe in regard to this matter, the cold facts are that when it comes to the maintenance of public health activities the state must stand alone in the matter of financing such activities. In this respect, we are on a level with other states, but most of the other states are very much more generous in their provision of funds for their public health service than is Nebraska. To illustrate this, one important instance is mentioned, and others could be given. Nearly all of the states are provided with one or more sanitary engineers, while Nebraska has none for lack of funds. It would be too tedious to give in detail the activities and services of the sanitary engineer. There are many communities where the services of a sanitary engineer would mean greatly improved sanitary and hygienic conditions. While the state health service is very much hampered for lack of adequate funds, the local boards of health, that is, the county and municipal boards, are even more poorly provided for, and the local boards are essential in our system of public health service, as it would be a physical impossibility, under existing conditions, for the State Bureau to render all the local services necessary.

The county board by law is composed of two county officers, and a physician. Of course, the county officers have their regular salaries as such officers, but no additional salary for serving on the county board, and because of this some are not very enthusiastic in rendering health service. The third member, the physician, is, in reality, the health officer of the county, and yet no salary is provided for him. True, there is sometimes allowed a nominal fee for special services rendered as health officer, and to get such often means a struggle with the commissioners. The lack of financial provision for county boards of health service causes one to wonder that the public gets even as good service in the matter of disease prevention as it is getting. This can be largely accounted for, because of the fact that physicians to county boards of health and physicians in country practice retain and practice much of the altruistic service that has been a tenet of the medical profession. Such physicians render very much gratuitous service in the assistance of disease prevention.

What has been said of county boards will apply equally as well to municipal boards, especially in the smaller cities, towns and villages. The physician to such boards is, in reality, the health officer, and yet he ordinarily receives but little, if any compensation for his services. It seems unjust and unreasonable for the public to expect a large amount of public health service in either municipalities or counties under existing conditions. The facts are that the public is getting really much more such service than it has any right to expect, due to the fact that boards of health render much gratuitous service. From a purely economic point of view, if the public expended sufficient money to maintain a real active health organization that would be in a position to keep the community in a wholesome, sanitary condition, ever ready to pick up and suppress the first appearance of contagious disease, thus promptly suppressing what might otherwise develop into a prolonged and expensive epidemic, by such expenditure, it would seem that the public was making one of its most profitable investments. In other words, much of the loss of time, as a result of sickness and necessary quarantine for the suppression of epidemics, once fairly started, might be averted by prompt action at the onset, thus giving the service an economic value, to say nothing of the saving from sickness, suffering, and perhaps death.

It seems rather apparent that it is going to take some organized effort and cooperation on the part of physicians and health boards to bring about an understanding on the part of the public of the necessity of providing something like sufficient funds to give adequate health service. From some quarters it is occasionally heard that public health service is likely to eventually bring about state medicine. Such apprehension is entirely unwarranted so far as Nebraska is concerned, and, I think, as a rule, so far as other states are concerned. Nebraska's policy is to have the public distinctly understand that its function is the prevention of disease and the promotion of public health, and not in any sense the treatment of disease, emphasizing the fact that the treatment of disease is exclusively the business of the individual physician. Therefore, so long as state health service pursues such policy, it can, in no way, be a stepping stone to state medicine. The public health service of the state realizes that without the good will and cooperation of the profession it can accomplish little for the public good.

In conclusion, let me say that in my opinion the thing that will be the greatest factor in bringing about state medicine, if so unfortunate a thing ever does occur, will be the medical profession allowing the spirit of commercialism, so prevalent in these times, to enter its ranks and commercialize it, thus swerving it from its longtime altruistic moorings, thereby causing the public to regard it with distrust.

IMPORTANT CONSIDERATIONS IN THE TREATMENT OF PERNICIOUS ANEMIA*

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Several important considerations should be kept in mind with reference to the very successful treatment of pernicious anemia recently established by Minot and Murphy.

1. The Minot-Murphy dietary regime is not an emergency treatment to be employed only in the event of a relapse. Pernicious anemia is a deficiency disease caused by the lack of a specific dietary factor. It is therefore necessary for a patient to continue to ingest even after clinical improvement has been made some source of the active principle effective in pernicious anemia in order to prevent a relapse.

2. The Minot-Murphy diet for pernicious anemia is not a liver diet. It is a diet adequate in all respects—in calories, in carbohydrates, fat and protein, in minerals and vitamins—but exceedingly rich in the anemia-preventing factor or factors discovered by Whipple and Robscheit-Robbins. This factor or these factors may be obtained largely through liver, although kidney,

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chicken gizzard, apricots and peaches may also figure in the menu. Strict adherence to the original Minot-Murphy diet is not essential. A balanced liberal diet including sufficient quantities of food rich in the new dietary factor or factors of Whipple and Robscheit-Robbins is equally effective.

3. We must not lose sight of the fact that a patient who refuses liver may still be treated successfully, for kidney and chicken gizzard stand next in potency to liver. These may or may not be supplemented occasionally with liver, but should be supplemented with the second grade anemia-preventing or anemia-curing foods, such as peaches, prunes, apricots, apples, pancreas, heart, and brain.

4. A patient may make little progress even with the dietary treatment, unless he is fed sufficient quantity of the foods containing the dietary factor or factors of Whipple and Robscheit-Robbins. It is not enough to put into the diet liver, kidney, chicken gizzard, apricots, peaches and other specifically valuable foods. The amout ingested by the patient must be sufficient to call forth the maximum response in the regeneration of hemoglobin and erythrocytes. The quantity of liver required varies with the individual. From one-fourth to one-half pound per day may be necessary depending upon the individual response as well as upon the presence of other foods in the diet carrying the specific dietary principle. The only reliable way in which to determine the adequacy of the foods rich in the new dietary essential is to check up the blood findings with reference to reticulocytes, red cells, and hemoglobin.

5. The administration of diluted hydrochloric acid is not absolutely necessary. Equally prompt and favorable response has been made without it. Lemon juice is to be preferred to hydrochloric acid. According to Blatherwick and Long (*Journal of Biological Chemistry*, 1922, 53, 103), large amounts of citric acid do not destroy the acid-base equilibrium and are easily cared for by the organism through oxidation to carbon dioxide and water. Hottenger (*Monatsschrift fur Kinderheilkunde*, 1925, 30, 49), has confirmed the findings of Blatherwick and Long, and asserts that large quantities of citric acid can be burned in the body to the extent of 95 per cent. We have found that 100 cubic centimeters of lemon juice are equivalent to about 150 cubic centimeters of tenth normal hydrochloric acid, which is about the concentration of the acid in the stomach. Besides furnishing the initial acid necessary for gastric acidity, lemon juice also introduces a rich supply of water-soluble vitamins. Moreover, hydrochloric acid is liable to irritate the lining of the tongue, gums, cheeks and pharynx, while lemon juice, made pleasant-tasting by the addition of water and sugar, produces no such undesirable effects.

6. Up to the present day individuals suffering from pernicious anemia have shown remarkable improvement with the Minot-Murphy regime. Since the introduction of this new method of treatment surprisingly few deaths have occurred in patients fortunate enough to be given the new therapy. The comparatively few deaths reported were due to infection or other complications, to the giving of an insufficient quantity of the new dietary factor, to the deleterious effect of multiple transfusion, in which event the response to the dietary treatment seems to be unsatisfactory. There is still one more cause of death, from which we may draw a valuable clinical lesson. Patients allowing themselves to carry this disease without seeking medical advice or neglecting to call for medical aid immediately after the onset of a relapse, or permitting themselves to fall into too frequent relapses may be too far gone to be partly or fully benefitted by the administration of a diet rich in the anemia-preventing factor or factors.

It must be remembered that it is of paramount importance to institute adequate nutritional therapy as soon as a diagnosis is made. When a patient is allowed to suffer too frequent relapses or when the patient because of neglect becomes too moribund in any one period of relapse, he may be in no position to ingest the exceptionally rich but highly beneficial diet, or to receive any effective therapeutic value therefrom, even after ingestion. Good treatment may be impossible either because of the general indisposition of the patient and the extreme lack of appetite and utter distaste for food, or because of the absence of reactive power on the part of the bone marrow.

7. When liver extract is administered, it is important to give a quantity sufficient to obtain the maximum hematological response, for the extract contains but a small fraction of the potency of the original whole liver. In the administration of liver extract it is also important to follow the blood picture in view of the fact that occasionally samples have been found to be biologically inactive. It must also be stressed that in substituting liver extract, free from iron, for liver rich in iron, it is urgent to add to the diet foods covering the daily iron requirement. Red cells to be produced require iron for the production of hemoglobin as well as the nutritional factor or factors of Whipple and Robscheit-Robbins for the building of the erythrocytic stroma.

8. In the presence of focal infection, feeding of the anemia-preventing or anemia-curing foods gives less satisfactory results. Symptoms apparently relieved during treatment may reappear when intercurrent infection develops. When a patient is not responding to dietary treatment, a focus of infection should be suspected. If such focus exists, there is a poor response of the bone marrow to the feeding of foods especially valuable in pernicious anemia, and relief is delayed.

9. A patient suffering from pernicious anemia should be admonished to take adequate mental and physical rest. Activity beyond his reserve of physical or mental power may lead to a relapse.

10. Transfusion is still of value in very severe cases in which the red cell count falls below a million. It can be used to tide over a desperately ill patient, so that he may be able later to receive the full benefits of dietary treatment .

TYPICAL DIETS IN PERNICIOUS ANEMIA*

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In 1926 Minot and Murphy, giving clinical application to the experimental studies of Whipple and Robscheit-Robbins, reported upon the remarkable improvement in the health of patients with pernicious anemia on a diet particularly rich in liver or kidney and containing an abundance of muscle meat, fruits, and green vegetables. Murphy and Minot subsequently published the details of the diet they had found of great therapeutic value.

They gave in full two menus. The first one is as follows:

BREAKFAST

	Approx. Wt. in Grams
Liver or kidney, broiled	100
Oatmeal, 2 heaping tablespoons cooked, or dry meal	18
Milk, 3 tablespoons	45
Sugar, 2 level teaspoons	10
Toast, 3 slices (each slice 4x2x½ inches)	30
Butter, 1 level teaspoon or a piece 1x1x½ in.	5
Fruit, choice of	
a. Orange, average size	120
b. Strawberries, 5½ tablespoons	180
c. Grapefruit, ½ of 1 large one	200
d. Peach, 1 large one	120

DINNER

Beef stew or roast, trimmed of fat, large serving	120
Vegetables, freshly cooked, as spinach, string beans, cabbage, tomato, etc., 2 average portions of 5 to 8 tablespoons	250
Potatoes, baked, medium sized	130
Bread, 2 slices (each slice 3x4x½ inches)	70
Salad, pineapple, 2½ slices, of size in cans	140
Lettuce, big helping	75
Pudding made of	
Gelatine, 1 teaspoon (dry weight)	2
Rice, boiled, 2 heaping tablespoons	160
Raisins, 20 large ones	50
Milk, 2 tablespoons	30
(Fruits may be put into such desert and the raisins eaten separately).	

SUPPER

Liver soup, composed of	
Liver, minced	100
Milk, 1 tumbler	220
Flour, white, 1 teaspoon	4
Butter, 1 rounded teaspoon	10
Lamb roast, with or without fatty parts, 2 small slices	60
Macaroni, boiled, 3 tablespoons	150
or	
Potato, small one, or rice, 1 heaping tablespoon	80
Vegetables, fresh, 2 average portions 5 to 8 tablespoons	250
Uneeda biscuits or triscuits, 4	25
Butter, 1 level teaspoon or a piece 1x1x½ in.	5
Fruit, choice of	
a. Strawberries, 7 tablespoons	250
b. Orange, large one	150
c. Apricots or prunes, stewed, 2 tablespoons	100
Sugar, 2 heaping teaspoons	20

A vegetable soup could be taken in place of the liver soup and the liver prepared in the following form: Mince and mix with rice or potato and the allowance of butter, and stuff into green peppers.

These three meals represent in total 2500 calories, 135 grams of protein, 340 grams of carbohydrate and about 70 grams of fat.

The second menu is now listed:

BREAKFAST

	Approx. Wt in Grams
Fruit, choice of	
a. Juice of 2 oranges	130
b. Grapefruit, 1 medium sized one	240
c. Strawberries, 5½ tablespoons	180
Shredded wheat, 1 biscuit	30
Milk, 2 tablespoons	30
Sugar, 1 level teaspoon	5
Beef, minced, 2 heaping tablespoons	75
Cream, 20 per cent, 4 tablespoons	60
Toast, 2 slices (each slice 4x2x¼ inches)	20
Butter, 1 rounded teaspoon or a piece 1x1x⅞ inches	10

LUNCHEON

Liver, broiled	120
Lettuce or coleslaw, large helping	80
Potato, cold sliced, or baked, hot, 1 small one	80
Tomato, stewed, 5 tablespoons, or raw, 2 medium sized ones	150
Cauliflower or Brussels sprouts, an average portion or 3 tablespoons	130
Zwieback, 2 pieces	30
Butter, 1 level teaspoon or a piece 1x1x½ in.	5
Apricots, stewed, 3 heaping tablespoons	120

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*From the Department of Biological Chemistry and Nutrition, School of Medicine, Creighton University.

DINNER

Soup, consomme (any amount desired), mixed with sieved liver (flavor with spice)	75
Mutton, 2 large slices, trimmed of fat	100
Beets or peas, 3 tablespoons	100
Potato, boiled, average size	130
Spinach, or string beans, an average portion, 3 to 5 tablespoons	150
Toast, 2 slices (each slice 4x2x½ inches)	20
Butter, 1 level teaspoon or a piece 1x1x½ in.	5
Blancmange, 2 heaping tablespoons (made of 1 cup of Irish moss, 2 cups of milk, 1 tablespoon of 20% cream, 2 teaspoons of sugar)	100
Blueberries, 5 tablespoons, or apple sauce with 1 level teaspoon of sugar	80

This menu furnishes 2050 calories, 115 grams of protein, 250 grams of carbohydrate, and 65 grams of fat.

Minot and Murphy cautioned against the use of a high fat content in the diet on the ground that it had an unfavorable effect upon the patient with pernicious anemia. In order to keep the fat content down they even recommended the use of mineral oil in salad dressing. It is now known, however, that there are actually no contra-indications for a high fat intake, provided the fats are not beef fat, lard, bacon fat or olive oil, but fats closely associated with the fat-soluble vitamins such as liver fat, butter, cream and egg yolk. A good salad dressing, highly nutritious, can be made from cream and lemon, flavored with small quantities of salt and pepper.

THE KOESSLER AND MAURER REGIME

In 1927, Koessler and Maurer published their results in the treatment of pernicious anemia with a diet which proved equally as favorable as that of Murphy and Minot. The Koessler and Maurer diet is nutritionally adequate in all respects. Its special features are a high caloric intake, and a profuse abundance of vitamins. Incidentally it is also rich in the dietary principle of Whipple and Robscheit-Robbins.

The importance of vitamins in the causation of anemia has been the subject of many investigators. Koessler, Maurer and Loughlin themselves have been able to develop a condition akin to pernicious anemia in rats subsisting on diets deficient in vitamin A. The three investigators mentioned see in pernicious anemia a mixed deficiency disease. The blood changes and the changes in the gastro-intestinal tract occurring in the disease, they believe to be due to underfeeding with vitamin A over a long period of years, the nervous condition to the absence or to a deficient quantity of vitamin B, and the tendency to hemorrhage to partial or complete lack of vitamin C.

Koessler and Maurer make use in their diet of the following vitamin-rich foods:

Whole wheat bread made with milk (A, B, D, E, P-P factor of Goldberger), wheat germ (B, E, P-P factor of Goldberger).

Milk and cream (A, B, D); butter (A, D); eggs (A, B, D).

Beet greens (A, B); dandelion greens (A, B); carrots (A, B, C); cauliflower (A, B, C); Swiss chard (A, B); lettuce (A, B, C, D, E, P-P factor of Goldberger); spinach (A, B); endive (A, C); tomatoes (A, B, C, P-P factor of Goldberger); sweet potatoes (A, B); Hubbard squash (A); fresh string beans (A, B, C); peas (A, B).

Oranges (B, C); lemons (B, C); grapefruit (B, C); bananas (B, C); fresh berries (B, C).

Of meats, liver and kidney contain the largest amount of vitamins A and B. Liver contains D and E. They are probably also rich in the anti-pellagra vitamin, the P-P factor. Sweetbreads, brain, beef heart and lungs stand next in richness in vitamins. Muscle meat is much inferior in vitamin content. The meats chosen are also suitable in their content of the anemia-preventing and anemia-curing principle of Whipple and Robscheit-Robbins. The relative value of animal foods in the treatment of pernicious anemia may be gleaned from their ability to regenerate hemoglobin in dogs rendered acutely anemic by severe hemorrhage.

RELATIVE HEMOGLOBIN PRODUCING VALUE OF FOODS (WHIPPLE)

DIET, GRAMS DAILY	Grams of Hemoglobin Produced within a Period of Two Weeks.
Beef Liver, 400	100
Beef Liver, 300; bread 300	50
Chicken Liver, 200; bread 250	75
Beef Kidney, 200; bread 250	90
Pig Kidney, 200; bread 350	70
Chicken Gizzard, 300; bread 200	85
Pig Pancreas, 250; bread 300	30
Heart Muscle, 200; bread 300	28
Beef Spleen, 200; bread 250	25
Brains, 300; bread 300	25
Beef Muscle, 200; bread 400	25
Pig Muscle, 300; bread 200	20

We may also give the relative values for the fruits that are especially efficient in the treatment of pernicious anemia.

DIET, GRAMS DAILY	Grams of Hemoglobin Produced within a Period of Two Weeks.
Apricots, 200; bread 300	40
Peaches, 200; bread 300	40
Apples, 200; bread 320	35
Prunes, 250; bread 350	35
Raisins, 300; bread 350	25

BREAKFAST

One orange sliced, or one-half grapefruit, or one baked apple with cream, or a dish of apple sauce or fresh pineapple or prunes.

Graham bread made with milk, two or three slices equal to 40 gms., toasted.

Butter, two prints, 10 gms. each.

Oatmeal, 20 gms. dry weight (3 heaping tablespoons).

Cream, 20 per cent, as much as desired.

Eggs, one or two, at least the yolks.

Milk, two glasses, each containing 6 ozs. of milk and ½ oz. of cream. If preferred, one glass may be taken at breakfast and one two and a half hours later.

DINNER

Milk and cream, 6 oz. of milk and ½ oz. of cream.

Whole wheat bread made with milk, 40 gms.

Butter, 2 prints, 10 gms. each.

Meat: liver (calf's liver, chicken liver, goose liver, liver sausage) or sweet breads, or kidney (veal or mutton), or calf's brains or calf's lungs, 150 gms.

Tomatoes, fresh, stewed, broiled or canned, 100 gms.

Spinach or carrots, 100 gms.

Lettuce or raw cabbage (coleslaw), dressing made with oil and lemon juice, or better still with cream and lemon juice.

Custard or omelet with jelly (raspberry or orange marmalade) or vanilla ice cream.

4:00 P. M.

One glass of milk (6 ozs. of milk and ½ oz. of cream per glass).

SUPPER

Any one of the meats given under dinner: 100 gms. or 100 gms. of beefsteak or lamb, or instead of the meat, two eggs.

One or two glasses of milk, (6 ozs. of milk to ½ oz. of cream).

Bread, whole wheat, 30 to 40 gms.

Butter, 2 prints, 10 gms. each.

Tomatoes, spinach, Hubbard squash, carrots, cauliflower, peas, kidney, navy, or fresh string beans, sweet or Irish potatoes, beet tops, Swiss chard, lentils, lettuce. At least three vegetables, from 80 to 100 gms. of each.

If 2 glasses of milk cannot be taken at supper, one of them should be drunk before retiring.

MEDICATION

One-half hour before each meal, 1 tablespoon of wheat embryo extract or orange juice.

Immediately before each meal—three times daily—50 drops of dilute hydrochloric acid in orange juice or water.

During the meal, 50 drops of hydrochloric acid in water.

After the meal, 50 drops of hydrochloric acid in water.

Three times daily, from one to two teaspoons of powdered brewer's yeast (Harris') or three times daily two tablets of Harris' yeast (standardized for vitamin B content).

With reference to the administration of hydrochloric acid, in conjunction either with the Murphy-Minot or the Koessler-Maurer diet, it may be stated that it is not necessary, if lemon juice is employed. Instead of prescribing 50 drops of dilute hydrochloric acid, equally good results can be obtained with 15 to 20 cc. of lemon juice diluted in water and sweetened to suit the taste. Lemon juice not only furnishes initial acid for the stomach, but adds to the alkaline reserve in the blood. It also introduces a rich supply of water-soluble vitamins. Lemon juice is much to be preferred, since it does not irritate the mucous membrane of the tongue, gums, cheek and pharynx as hydrochloric acid does.

The full diet contains sufficient calcium and phosphorus. It also fulfills the daily requirement for iron. As long as the full diet cannot be taken three times daily, one teaspoon of a 10 per cent aqueous solution of ferric citrate should be added to the milk taken with each meal.

The diets of Murphy and Minot and of Koessler and Maurer do not impose any hardships on the patient. It goes without saying that the food must be palatable and attractive, and that five or six small meals a day may be found more suitable than three large ones. The condition of the patient is a guide to the frequency and manner of feeding. For patients who experience difficulty in getting used to the diet, it is better to feed small portions until the full diet can be taken. For the sake of variety it is sometimes advantageous to interchange the Murphy-Minot diet with the Koessler-Maurer diet. As a rule, even refractory patients soon begin to like the new diets in pernicious anemia, and their appetite soon increases. It is unanimously conceeded that patients invariably gain weight following the use of the new dietary prescription.

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COULD HAVE BEEN PERMANENT

Doctor McTavish had worked hard to put his boy, Sandy, through medical school. When Sandy graduated and returned home the old doctor turned his practice over to the boy and took a well-earned vacation.

Upon his return he was greeted by Sandy at the station, who said:

"Father, I've made some marvelous cures. I even cured Mrs. MacGregor's stomach trouble after you had treated her for four years!"

"What!" exclaimed the old doctor, "I'll have you to know that Mrs. MacGregor's stomach put you through college!"—American Mutual Magazine.

TREATMENT OF THYROID DISTURBANCES*

A. M. SONNELAND, M. D.,
Norfolk, Nebr.

In presenting the treatment of thyroid disturbances, I will attempt to summarize the various methods of the various authorities whose opinions are recognized today.

Prophylaxis or prevention is just beginning in this country to gain the consideration of the laity it should receive. Regular doses of iodine given early in school life and continued until puberty will largely prevent goitre and, according to Boothby(1), is entirely safe for children in this county up to the age of 20, because he says those under 20 rarely have any adenomatous tissue present, and the presence of this type of tissue, he says, is the factor to be considered as causing hyperthyroidism. He also states that any one with a normal thyroid, can take reasonable doses of iodine without harmful effect.

Prophylaxis has reduced the goitre population of Switzerland from 86% to about 7%.

The experiments of Marine and Kimble(2) of Akron, Ohio, among adolescent children of that city developed these striking results: That of 2190 pupils taking iodine twice yearly, only 5 have developed enlarged thyroid, while of 2305 pupils not taking the iodine 425 developed thyroid enlargement. In 1182 pupils with thyroid enlargement at the first examination who took the iodine, 773 thyroids have decreased in size; in 1048 pupils with thyroid enlargement who did not take iodine, only 145 thyroids decreased in size. This indicates the curative as well as the preventative value of the drug.

Thyroid enlargement, which is quite common in pregnancy, may be prevented in both mother and fetus by giving iodine in the first one-half of the pregnancy. While giving this treatment it is very necessary to watch closely for evidence of iodism —this is, a rapid pulse, increased temperature and other signs of mild thyro-toxosis.

The large number of goiters in this country today is one evidence of the lack of rational hygiene of the gland in the past. In the treatment of hyper-thyroidism, all methods of treatment aim to reduce the basal-metabolism. This is often accomplished in mild cases by complete physical and mental rest, which decreases the physiological demands. This is best achieved in a hospital or sanitarium, as the environment of the average home is rarely free from petty domestic cares, and mental repose and complete rest are absolutely necessary.

Because of the elevated basal-metabolism in most of these cases, a liberal diet is required to prevent further loss in weight. Instead of the usual 14 to 17 calories per pound, 25 to 30 calories the pound are indicated if the patient can handle the food. Fasting for 1 or 2 days is often the best procedure in cases of extreme vomiting and nausea. The rest treatment shows its most marked results during the first 3 or 4 weeks, in which time the pulse slows considerably and the basal-metabolism lowers. The period of rest is recommended in all cases in which surgery is contemplated.

Pemberton(5) of the Mayo clinic prepares his patients for thyroidectomy by the use of iodine, rest and high caloric diet. Patients who are mildly toxic are allowed to be ambulatory and receive 10 minums of Lugol's solution three times daily for 5 to 7 days before operation—the others remain in hospital in the pre-operative period from 5 days to a month and receive there the iodine rest and diet. The patients are all encouraged to be up and around before operation, and the fact that they mingle with others who have been operated successfully tends to build up their morale, which Pemberton believes is a very important preparation measure. He treats those who come in with a crisis with doses of Lugol's from 50 to 100 minums daily until the symptoms subside and then they are given 10 minums three times daily until operated. No digitalis is given unless there is a frank indication for its use—that is, when compensation of the heart has not been established by rest.

The time of operation, according to Pemberton is determined by experience. Bad risk patients receive treatment as long as definite improvement continues, that is, lessening of nervous tension, restlessness, mental stimulation or depression, nausea, "stare", etc.

He also emphasizes post-operative treatment. Lugol's sol. is given as routine and if the patient is a bad risk 40 to 60 minums are given to prevent post operative reaction—10 minums daily of Lugols solution are recommended for two or three months following operation.

Goiter cases, in responding to rest treatment, necessitate a decrease in the amount of the functional gland substance. The means to this end are roentgen ray and surgery, for which there are three primary indications: Pressure symptoms, toxic symptoms and for cosmetic reasons.

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*Read before Madison, Pierce, Knox and Antelope Counties Medical Societies.

As to operation for cosmetic reasons, every patient must be her own judge.

It is not always possible to choose correctly between x-ray and surgery—to know by which the case will be the more benefitted. The earlier conception that x-ray treatment was devoid of the risks that attend surgery is incorrect. Foster says that stormy reactions may follow exposure of limited surfaces—that if the thyroid is toxic death may occur. Simple goiters have been followed by Graves' disease, and fatalities have occurred in the hands of the most experienced x-ray technicians. He believes that severely toxic cases are unsuitable for roentgen treatment because of these reactions.

Some authorities claim that x-ray will relieve all symptoms except exopthalmos in 75% of the cases.

Aikens(6) discusses the use of radium therapy in toxic goiter. Along with the rest cure he gives quinine hyperbromide, grains 5 with ergotin grains l. t. i. d., and a mixture of strontium bromide with a bitter tonic, and salines in the morning to increase free elimination. This treatment, when employed with radium, he found would bring about an improvement of symptoms. Dr. Tyler(7) also advises use of radium for severe hyperthyroidism with marked cardiac symptoms, because these patients can be treated in bed without disturbance and without causing excitement.

However, there is no question but that in the hands of a surgeon who has specialized in this line of work the results so secured by surgery are better than by other methods, and that results can be secured more rapidly.

For the pressure symptoms in simple goiter an operation is indicated at once, as small hemorrhages into the gland may cause death from pressure on the trachea. Pathological changes may occur at any time in simple goiter with resultant toxic symptoms which would also require thyroidectomy.

Strumitis, or inflammation of a goiter, is treated by applications of cold. When suppuration is present, Kocher recommends removal of that portion of the goiter.

At the Lakeside Hospital in Cleveland, Dr. Crile has developed a very careful technique for the surgical treatment of the severe hyper-thyroidism. The patient is kept in bed previous to the operation. Lugol's sol. in appropriate amounts is used and by tactful management the patient is protected from fear and worry. The operation is done in the patient's room in some cases. A preliminary ligation is done, followed later by a thyroidectomy. Among the last 500 thyroidectomies, there was a mortality rate of only 1%.

Malignant tumors of the thyroid should be excised if recognized in time.

Cretinism is treated by thyroid extract. Gordon advises one-tenth grain, t. i. d. as the initial dose. After one week the dose may be increased to one-eighth grain. He advises that this treatment be discontinued on alternate weeks, and that the dosage of the thyroid be gradually increased up to tolerance, or the absence of disturbing symptoms. The tolerance is best determined by watching the metabolism, and in the absence of this method the temperature and pulse must be the guides.

Myxedema is treated much the same as cretinism except that larger doses are generally advised. In addition, the patient should be kept in bed during the first few weeks of treatment on account of anginoid pains and cramps in the abdomen and extremities. The effect of the treatment may be expected to become evident in a brief time. There is a gradual clearing up of the mental cloud, the patient becomes less somnolent and at the same time there is a change in the facial expression and a loss of puffiness. Myxoedema following surgery can be prevented, according to Pemberton(8) in most all cases by the proper surgical technique, i. e., conserving sufficient gland tissue along posteromesial surfaces of the lobe.

Acute thyroiditis, which occurs as a complication of other diseases, is best treated by application of ice packs to the neck and incision of abscesses when occurring.

In conclusion, it is my opinion that the international program of thyroid hygiene, which is under way, will be of such far-reaching consequences that abnormalities of the thyroid will become a rarity in the not far distant future.

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The Annual Meeting May 14, 15, 16, Omaha

Remember the annual meeting of the Nebraska State Medical Association at Omaha, May 14, 15, 16; attend if possible and make yourself a part of the meeting by getting acquainted and by taking part in the discussions. Introduce yourself to the man next to you, if you do not know him: you must go half way if you want to get acquainted.

The tentative program printed on succeeding pages in this Journal promises a considerable variety of scientific work and social entertainment.

Especial attention is called to the playlet to be put on by the famous Omaha Community Playhouse, an organization widely praised for their clever work. This alone is worth the time to go to the meeting.

The number of paid-up members at this time is about the same as last year. If you are still delinquent, remedy the matter at once.

Remember that this is an organization of doctors, for doctors, by doctors, for the good of all.

THE POOR (?) COUNTRY DOCTOR

If certain writers in popular magazines and some in medical journals are to be believed the country doctor is not only passing, but is already buried, although he may not realize it. They prove it by statistics—and what is more convincing and less reliable than statistics? Known facts mean nothing aside of statistics.

In a little publication, *Medical Economics,* a city physician diagnoses the case of the country doctor thus:

> "The doctor in the country cannot make a decent living. Another reason lies in the attitude of the people themselves. They do not trust the country doctor, except in emergencies where they cannot help themselves, and no doctor can live on emergencies. With good roads they run to the city physician whenever they can, to the detriment of the country doctor".

An important statement if it were true; but it is not true. The city physician makes a statement that does not cover the case at all, and shows that he lacks information on the subject he is trying to discuss.

The well equipped country doctor—well equipped mentally, morally and professionally—commands a generous clientele everywhere. People flock to him and support him generously, if by his work he commands their confidence and respect. It is the story of the better mousetrap and the pathway to his door. The hegira to the city physician, when it occurs is the result of the lack of confidence in the local man—to something inherent in himself. The country doctor as a whole must not be judged by the few who lack ability, or who having ability, do not grasp the opportunities before them. Physicians who are never certain of anything, who call consultants on the least excuse, or refer cases to specialists for diagnosis that come within the accepted 80% that can and should be cleared up by the general practitioner are the cause of such drift as there is toward the city physician. They are not real physicians—they are procurers for the specialist! They are the minority of the country doctors and the case of the country doctor cannot be rightfully judged by such.

We cite the cases of three young physicians from a metropolitan city who within six years have located in a country town of 2,000—all three doing well and well aware that they are luckier in a country town than in the metropolitan city, and another young physician who within four years has located in a village of 550, who has equipped his surroundings with hospital facilities on a small scale, has x-ray and physiotherapy apparatus and is busy all the time. Dozens of similar cases can be cited, but this is enough. People want service, real service, and when they realize they are getting it, they will respond to the country doctor.

Financial conditions in some sections of the farming belt have been hard the past few years, but not so bad anywhere, we believe. as to drive physicians away.

The shortage of physicians in Nebraska small towns has never been acute in communities large enough to support a physician. The writer believes and has before had occasion to say that this is probably partly, at least, due to the fact that there are two Class A medical colleges within the state.

It is interesting in passing to mention an article "They Shall Not Pass," in the April *North American Review,* in which the writer after relating some of the heroic adventures of the country doctor as he finds him today concludes, "The country doctor passing? Hardly. But the assumption makes good editorials, just the same."

The country doctor needs no pity, does not want to be pitied. Good roads are coming fast, —the principal highways are built and the farm to market roads will be, under the new law just passed, built within several years. Small town high schools average well with those of larger places. Country towns are therefore desirable places to live and to practice medicine.

Writers like to compare the country doctor with the city specialist which is no comparison at all, but a contrast. If a comparison were attempted of the country doctor with the general practitioner in the city the comparison in actual effort and financial returns might even be in favor of the country doctor.

THE ANNUAL MEETING FORTY YEARS AGO

An hour spent looking over the proceedings of the annual meeting of 1888 brought forth some interesting data of passing interest.

Previous to reorganization in 1903 the profession was organized under the name of Nebraska State Medical Society, not Association.

The meeting was held in the old Federal building at Lincoln, now the City Hall. Fifty-five permanent members signed the roll. Of this number the only ones now living are Dr. A. R. Mitchell, Lincoln; Dr. W. L. Dayton, Lincoln; Dr. M. L. Hildreth, Lyons; Dr. J. M. O'Connell, Ponca; Dr. J. E. Summers, Omaha; Dr. Harold Gifford, Omaha; Dr. D. C. Bryant, Omaha (now Claremont, Calif.); Dr. J. P. Lord, Omaha; Dr. Donald McCrae, Council Bluffs; Dr. A. B. Anderson, Pawnee City; Dr. W. O. Henry, Pawnee City, (now Los Angeles); Dr. H. C. Damaree, Roca, we believe.

Twenty-seven physicians were admitted to membership at this meeting among whom were the following "war horses" of the Nebraska profession: Drs. J. S. Devries, Fremont; A. F. Jonas, Omaha; Wm. J. Davies, Fremont; F. A. Long, Madison; W. H. Wilson, Table Rock, (Lincoln); J. C. Moore, Oakland, (Hollywood, Calif.); F. S. Owen, Stromsburg, (Omaha); F. A. Butler, Harvard, (San Diego); J. H. East, Rising City (Denver). It is believed all the others have passed to the Great Beyond.

Drs. J. E. Summers and J. P. Lord were accredited delegates to the meeting of the American Association at Chicago that year.

The meeting was presided over by Dr. G. H. Peebles, David City, president and Dr. Milton Lane, Lincoln, was elected president for the succeeding year.

The late Dr. A. S. Von Mansfelde, Ashland, was the secretary and his report reflects the prolixity and preciseness that was his characteristic.

Among the historic characters of Nebraska Medicine there were present Drs. R. R. Living-stone, Plattsmouth; Harvey Link, Millard; J. C. Denise, Omaha; L. J. Abbott, Fremont.

The writer remembers an incident of the meeting. Having tired of sitting in the meeting, he strayed to the corridor for fresh air and while there, out came Dr. Harvey Millard and Dr. L. J. Abbott, of Fremont, arm in arm. On asking what was next, one of them replied, "The next will be a drink of whisky; won't you go along?"

The committee on public hygiene and public health reported a proposed bill creating a board of health which was enacted into law a year later. Proposed constitutional amendments as usual now, occupied more time than justified by their corrective value.

Papers were read at that meeting by the following now living: "Progress in Surgery," Dr. Ewing Brown, Omaha (San Pedro, Calif.); "Hernia," Dr. A. F. Jonas, Omaha; "Stone in the Bladder" and "Stone in the Kidney," Dr. J. E. Summers, Omaha; "An Entire Body Splint," Dr. J. P. Lord, Omaha; "Correct Diagnosis in Surgical Disease," Dr. Donald McCrae, Council Bluffs; "Septic Foreign Bodies in the Eye," Dr. Harold Gifford, Omaha; "Report of Two Interesting Surgical Cases," Dr. W. O. Henry, Pawnee City. (Los Angeles).

When a recess period was announced secretary von Mansfelde came to the rear of the room where most of the new members were sitting and said, "I want to shake hands with and greet these new members." This act of kindness and human interest was thoroughly appreciated and never forgotten. A like interest in the new members at our annual meetings in these days is a desideratum devoutly to be wished.

THE RECENT COLLEGE OF PHYSICIAN'S MEETING AT BOSTON

The Thirteenth Annual Clinical Session of the American College of Physicians, held at Boston, the week of April 8th, was one of the best meetings ever held by the College. Headquarters for the meeting were at the Hotel Statler and the attendance was the largest in the history of the College. Fifteen doctors from Nebraska attended the meeting, and all agreed that the program and clinics were most excellent. Everyone felt that he was well repaid for the long journey, and plans are already being made to attend the next session which will be in Minneapolis, in February, 1930.

The Clinics were held each morning from 9 a. m., to 12 noon, and scientific papers were given in the afternoon, from 2:30 to 5:30. Scientific papers, and addresses were also given on Monday, Tuesday and Wednesday evenings at 8:00 p. m.

The Tuesday evening session was followed by a smoker, at which several interesting films were shown and an excellent musical program provided.

The annual banquet was well attended, and the address of the evening was given by George E. Vincent, President of the Rockefeller Foundation. He is a most excellent speaker, and it was indeed a great treat to have had the privilege of hearing his splendid address.

The following men were elected Masters, at this meeting: Dr. Stengel of Philadelphia, Dr. Martin of Montreal, Canada, Dr. Jennings of Detroit, Mich., Dr. Warthin of Ann Arbor, Mich., and Dr. Smithies, of Chicago, Ill. Masters of the College of Physicians are chosen from the Fellows of the College by the Board of Regents, on account of their research work, their emminence in the practice of medicine, or some special citation which makes them outstanding figures in the Medical Profession.

Dr. James H. Means of Boston deserves special mention because it was through his untiring labors that this successful meeting was made possible. He managed all the clinics, scientific programs, and also acted as Toastmaster at the Banquet. The various hospitals, medical schools, and profession as a whole, gave us a most hearty welcome and co-operated to the fullest extent in every detail, to make this a successful meeting. If there is any truth to the old saying that "Bostonians are reserved, and it is hard to penetrate their epidermis," it was surely disproven at this session.

It is impossible to report on the different clinics and papers, but I am sure that the men who attended will report to their various groups, the new and interesting facts that were learned at this meeting.

The Fellows and Associates of the State of Nebraska wish to take this opportunity for thanking the committee, hospitals and the profession at large in Boston, for a wonderfully interesting and profitable week.

—Adolph Sachs, Omaha.

POSTGRADUATE WORK? YES! BUT HOW?

At Vienna or some foreign medical mecca, perhaps as an interrupted vacation period.

At your alma mater, perhaps remotely located and divorced from you by years.

At the nearest, but to you strange, university medical college.

At your county or district medical meeting as an organized week-end teaching assembly.

At the hospital in your area best organized for teaching.

OR, not at all, like myself.

Postgraduate work I certainly need, but how shall I get it? Today we are accused of graduating Super-Six, -Eight or -Twelve cylinder doctors and putting them on the road with no service stations to maintain them. Where will you, doctor, general practitioner, get your fouled medical spark plug cleaned today?

I am not joking. I am very much in earnest. As a member of your Medical Education Committee serving you under the direction of your House of delegates, I am asked to investigate and recommend a solution. Do you, Dr. Long, or Dr. General Practitioner, feel the need of postgraduate teaching? (Answer now to yourself where, or no place). If so, in what branches? Is it pediatrics, obstetrics, laboratory or clinical diagnosis, surgery, or special branches? Would you spend some time and seriously return again to student application?

To have Dean Keegan and Dean Schulte prepare a postgraduate course for you and have no enrollment is an embarrassment appreciated best by the good cook when guests to the party fail to come. And yet they are anxious to prepare the meal if you will but come and eat it.

To organize a teaching team and function it for a two or three day period at stated places costs time and money, and some such experiments have been very disappointing. Perhaps they were not in your area. Perhaps you did not know about them. That was not your fault. That was the fault of the organization. What we now ask is, "Do you want any of these types of postgraduate work"?

Three states near us have had courses of nine weeks' duration, one day a week, in organized districts. Thirty doctors were previously registered and paid a cost fee. Three classes succeeded especially well where good teachers were procurable. Indeed, these three states that success seems dependent on this factor. Good teachers are not to be found here, there and everywhere at any time. It may be possible to procure through some central body such as the American Medical Association, the Carnegie or Rockefeller Institute, the continuous services of such a teaching staff, providing several states would cooperate. Would you subscribe to such an endeavor to bring postgraduate study to your district?

If you and enough others are really interested in postgraduate service stations for your super-six brains, write your committee on Medical Education today. Then a questionnaire survey letter may be sent you or your county medical secretary to the end of attempting to perfect a postgraduate organization to help you.

—J. Stanley Welch, Lincoln.

EDITORIAL PARAGRAPHS

Pneumonia takes a toll of about 100,000 lives in the United States each year.

At home you would never eat a hollow radish; at a hotel you get only hollow radishes.

The average per capita consumption of meat in the United States for 1928 was 138 pounds.

Glenwood Springs, Colo., claims a ninety-five-year-old who is said to be erupting the third set of teeth.

The Chicago Medical Society offers two weeks of summer clinics, June 17 to 29th, at the Cook County hospital.

Sheean, in *J. A. M. A.*, April 13, describes a successful case of transplanting a part of a thumb nail to the other thumb.

Dr. Clemens Von Pirquet, introducer of the Von Pirquet reaction test, died in Vienna, March 1st, at the age of fifty-five years, a suicide.

The inroads made by truck and busses the last several years on the business of the railroads has not prevented the railroads from paying dividends.

Several physicians of this state are said to be in trouble with the bureau of licensure for not renewing the licenses. Remember the mills of the Gods.

Press reports indicate that some of the Auxiliaries held a meeting recently and spent the evening playing bridge. Serious minded auxiliary members!

The Hoffmann-LaRoche Chemical works, manufacturers of a number of Council accepted products, is erecting a new laboratory in New Jersey, 12 miles from New York.

"Tonics and Sedatives" in *J. A. M. A.* on the authority of the *Buffalo News* defines a family physician as one who can diagnose a case of measles without a blood test and an x-ray.

The recent legislature was not prolific in welfare legislation, the affairs of the banking commission and the bank guarantee law overshadowing everything else.

Everybody has heard about Paul Revere's ride; but it is not generally known that Paul Revere was a chemist of note in Boston at the time of the Revolution and later a manufacturer of church bells.

The annual meeting of the American Medical Association at Portland, Oregon, July 8-12, will appeal to a great many Nebraska physicians who will take advantage of the opportunity to visit the Northwest Coast.

The Phi Beta Pi National Medical Fraternity will hold a luncheon at noon on Wednesday, May 15th, during the state medical meeting at Omaha. All Phi Beta Pi are urged to come to the state meeting and attend the luncheon.

On the suggestion of the editor of the *N. Y. State Journal of Medicine* that our signed editorials give the impression to strangers of being copied from some other journals, we will hereafter give the address of the author after his name.

"Road boils" is a term invented by the highway department for certain spring upheavals in our highways. Since a boil has but one hole and a carbuncle many holes the term "road carbuncle" is suggested as being more nearly descriptive of the conditions.

The following two bills have become laws: Senate bill 190, regulating the importation, production, compounding, possession and distribution of narcotic drugs or their synthetic substitutes, and house bill 527, creating a state anatomic board and providing through said board for the distribution and use of certain dead human bodies for educational purposes.

Last month this Journal called attention to the postgraduate work in pediatrics and obstetrics offered at the University College of Medicine from May 6 to May 13—the week preceding the annual meeting. It is to be hoped a sufficient number of Nebraska physicians will be able to attend this course to make it possible. A wonderful opportunity is offered the profession.

The Public Activities committee, with the cooperation of the Omaha local Committee of Arrangements for the annual meeting, has arranged for about twenty-five meetings during the week of the annual meeting at which speakers from various parts of the state will present topics in the interest of Public Health. The Chamber of Commerce, stores, newspapers and the Council of Social agencies and the Nebraska Tuberculosis Association are taking an active part in this work.

A man who had been "treated for what ailed him" by lights and other physiotherapy apparatus, until he got tired of paying, not seeing results, said he felt like taking an axe and smashing the accoutrement when he found out that he had anasarca. One swallow does not a summer make, but it goes to show what is done to interest the patient and extract dollars sometimes without making a diagnosis.

The work of Walter Reed and his associates of the Yellow Fever Commission has now been officially recognized by the congress of the United States and approved by the president. The twenty-two members of the military establishment who participated in the experimental investigation of yellow fever in Cuba constitute a roll of honor. They volunteered to be injected with blood from patients dying of yellow fever or to be bitten by infected mosquitoes, to sleep in beds in which patients died and to wear the clothes of patients who died. Thus they helped to drive yellow fever almost from the face of the earth. Our own land had previously been invaded at least ninety-five times with a loss of not less than a hundred thousand lives. It seems incredible in the light of present knowledge that epidemics of yellow fever have taken 3,454 lives in New York, 10,038 in Philadelphia, 4,565 in Charleston, 7,759 in Memphis, 2,000 in Norfolk and 41,348 in New Orleans, besides sweeping through Baltimore and many smaller cities. In those days people fled from their homes, for nobody knew whence or how the scourge came.—Says *Science*, April 5. . . . . By this work it was proved that yellow fever is transmitted by *Stegomyia fasciata* and that it can be transmitted by the injection of blood from yellow fever patients. Congress just recently honored these men by an award of gold medals and by pensioning the sixteen now living and the widow of one at the rate of $125 per month. Dr. A. S. Pinto, health officer of Omaha, was a member of the Yellow Fever Commission and is, therefore, one of those so honored.

1929 NEBRASKA MORBIDITY SUMMARY—PRINCIPAL DISEASES

	March	Jan.	Feb.
Chicken-pox	116	204	161
Diphtheria	73	91	80
Influenza	24	1771	89
Measles	189	113	208
Meningitis, Cerebrospinal	9	4	16
Poliomyelitis	1	0	2
Scarlet Fever	510	418	555
Smallpox	256	209	278
Tuberculosis	15	18	8
Typhoid Fever	3	11	5

Gonorrhea	166	220	127
Syphilis	66	83	60

Promptness in reporting the reportable diseases enables the Board of Health having jurisdiction to more effectively control threatened epidemics. The board cannot only establish quarantine or placard at once but can aid in avoiding misunderstanding by delivering instructions. Much remains to be done in informing the public that the police power exercised by quarantine or placard is vested in the Board of health, not in the physician. The fact that quarantine becomes automatically operative upon recognition of the quarantinable diseases does not alter this exercise of police power nor delegate the power to others. In other words, every case of guarantinable or placardable disease developing is one of police power supervision from the start.

By Congressional Joint Resolution, May 1st was designated as National Child Health Day. This is commonly called May Day. The objective is preservation and improvement of the health of our children. In some localities much enthusiasm has been displayed and successful programs conducted in a most commendable manner. Evaluation of health improvement is afforded and should be systematized. This annual May Day movement can well be expanded to include adult health or better community health without detracting from the child.

P. H. Bartholomew, M. D.,
Director of Public Health,
Collab. Epidem'st, USPHS.

ANNUAL MEETING, NEBRASKA STATE MEDICAL ASSOCIATION, ELKS' CLUB ROOMS, OMAHA

SCIENTIFIC PROGRAM

Tuesday, May 14, 1929, 8:30 A. M.

Invocation..........Rev. Frank G. Smith

1. Heart Diseases in Children....E. S. Wegner, Lincoln
   Discussion..........Dr. C. Swanson, Hastings
2. Some Practical Considerations in Mal-Nutrition in Children..........Dr. Herman M. Jahr, Omaha
   Discussion..........Dr. H. B. Hamilton, Omaha
3. The Ketogenic Treatment of Epilepsy..........Dr. Lucien Stark, Norfolk
   Discussion..........Dr. Rodney Bliss, Omaha
4. The Value of the X-Ray in the Relief of Pain..........Dr. Roy Fouts, Omaha
   Discussion..........Dr. E. W. Rowe, Lincoln
5. The Purpose and Policy of the University Hospital..........Dr. J. Jay Keegan, Dean, University College of Medicine, Omaha
6. The Early Diagnosis of Pulmonary Tuberculosis..........Dr. Gerald B. Webb, Colorado Springs, Colo.
   Discussion..........Dr. Wm. N. Anderson, Omaha

Tuesday, May 14, 1929, 2 P .M.

Installation of the President of the Nebraska State Medical Association, Dr. H. E. Potter, Presiding

Introduction of the President-Elect: Dr. F. A. Owen..........Dr. B. R. McGrath, President

Address..........Dr. F. S. Owen, President

1. Surgical Address. Surgical Judgment..........Dr. W. J. Arrasmith, Grand Island
2. Peritoneal Absorption..........Dr. Chas. W. M. Poynter, Omaha
3. Some Phases of Acute Intestinal Obstruction..........Dr. Russell Best, Omaha
4. Personal Experience With Spinal Anaesthesia according to the Pitkin Technique..........Dr. J. W. Duncan, Omaha
5. Indications for, and Technique of, Duodeno-Jejeunostomy (Slides)..Dr. J. E. Summers, Omaha
6. Etiology and Surgical Treatment of Pulmonary Abscess..........Dr. Carl A. Hedblom, Chicago

Wednesday, May 15, 1929, 8:30 A. M.

1. The Relation of Food to Teeth in Children..........Dr. Floyd Clarke, Omaha
   Discussion..........Dr. E. V. Wiedman, Lincoln
2. Medical Address. The Anemia from Chronic Poisoning of Carbon Monoxide Gas..........Dr. C. P. Fordyce, Falls City
   Discussion..........Dr. B. F. Williams, Lincoln
3. The Problem of Hypertension..........Dr. H. J. Lehnhoff, Lincoln
   Discussion..........Dr. Geo. Covey, Lincoln
4. Nebraska Public Health..........Dr. P. H. Bartholomew, Chief State Health Dept.
   Discussion..........Dr. Earl Sage, Omaha
5. Diabetes..........Dr. Frank Conlin, Omaha
   Discussion..........Dr. J. S. Welch, Lincoln

Wednesday, May 15, 1929, 2 P. M.

Urological Symposium:

1. The Relation of Right Sided Pain to Urology..........Dr. J. M. Willis, McCook
2. The Significance of Blood in the Urine..........Dr. Chas. McMartin, Omaha
3. Urinary Obstruction..........Dr. C. A. Owens, Omaha
4. Tuberculosis of the Kidney..........Dr. A. D. Munger, Lincoln
5. Bladder Tumors....Dr. A. P. Synehorst, Grand Island
6. The Increasing Value of the Author's Cautery Punch Operation for the Relief of Obstructions at the Bladder Neck..........Dr. John C. Caulk, Prof. Genito-Urinary Surgery, Washington University, St. Louis, Mo.

Thursday, May 16, 1929, 9 P. M.

I. Clinical Conferences:

1. Present Day Diagnosis..........Dr. J. Clyde Waddell, Beatrice
   Discussion..........Dr. W. W. Arrasmith, Grand Island
2. Hay Fever..........Dr. E. T. Manning, Omaha
3. Clinical Presentations..........Dr. A. D. Dunn, Omaha
4. The Present Day Conception of Tuberculosis..........Dr. Miles J. Breuer, Lincoln
   Discussion..........Dr. L. T. Sidwell, Supt., State Tuberculosis Hospital, Kearney
5. Clinical Presentations. Electrocardiopraphic Interpretations..........Dr. W. O. Bridges, Omaha
   Discussion..........Dr. John C. Thompson, Lincoln
6. The Controversey Concerning the Diagnosis and Treatment of Hyperthyroidism..........Dr. Chas. A. Elliott, Prof. Internal Medicine, Northwestern Medical College, Chicago
   Discussion..........Dr. Francis Heagey, Omaha

Thursday, May 16, 1929, 2 P. M.

1. Lung Abscess. Case History..........Dr. J. A. Weinburg, Omaha
2. Unusual Injuries at the Hip Joint..........Dr. Robt. D. Schrock, Omaha
3. Bilateral Fractures of Femurs. Case History..........Dr. H. F. Johnson, Omaha
4. Diagnostic and Therapeutic Indications of Cisternal Puncture..........Dr. A. E. Bennett, Omaha
5. Fascial Space Infections of the Foot, With Slides..........Dr. Manuel Grodinsky, Omaha
6. Motion Picture, Caesarian Section..........Dr. J. R. Nilsson, Omaha
7. Goiters..........Dr. C. A. Roeder, Omaha

SOCIAL EVENTS

Wednesday, May 15, 1929

Dinner at 6:30....................$1.50 per plate

Elks' Club Ball Room

Toast Master....................Dr. F. J. Langdon

President's Address....................Dr. F. S. Owen

Entertainment

1. The Torchbearers, a Comedy, Produced by Omaha Community Playhouse.
2. Singing and Instrumental Music Before and After the Play. Music Supplied by Randall's Royal Orchestra. There Will Be Dancing After the Play.

MRS. S. A. PRESTON

President Woman's Auxiliary Nebraska State Medical Association

THE ANNUAL MEETING OF THE WOMAN'S AUXILIARY TO THE NEBRASKA STATE MEDICAL ASSOCIATION

Program

Registration....................Hotel Fontenelle

Tuesday, May 14

10:00 A. M....................Executive Session

12:15—Luncheon, Chamber of Commerce Rooms.

3:30-6:00—Tea, Conkling Hall, University of Nebraska, College of Medicine; Hostess—Woman's Auxiliary to the Nebraska State Medical Association.

Wednesday, May 15

10:00—General and Business Session.

1:00—Luncheon and Entertainment, Omaha Country Club.

Thursday, May 16

10:00—Automobile Drive About the City. Visit to St. Joseph's Hospital.

WORD FROM THE ANTIPODES

Meraj, Bombay Presidency, March 23, 1929.

To the Editor:

Perhaps you would like a note from India for the Journal. We left Hastings, (my two sons and I), September 1st, spent two months enroute, visited Honolulu, Fiji, New Zealand, Austria, Celebes, Java, Straits Settlements, and reached Calcutta about the middle of November. Of course, I visited hospitals where possible.

Since arriving in India I have done nothing but eye work—to date have worked in four hospitals and have a months work to do in one more, over on the coast. This work has taken up pretty much over India and we have met many excellent Indians and had many pleasant experiences. The patients are a simple, very respectful and courteous people and probably the most appreciative I have ever operated upon. Of course, when one is given vision after blindness—my work has been 95% cataract—he is always very thankful.

The warm weather is just beginning in this section (300 miles south of Bombay) registers about 105 each afternoon, but the nights are cool. Of course, 105 is not very warm for India.

We expect to sail about April 6. I hope to renew old acquaintances at Vienna. We will fly to Berlin and Paris and sail from England early in June, arriving home at Hastings late that month.

—E. C. Foote, M. D.

THE SOCIETIES

The **Dodge County Medical Society** held its monthly meeting and dinner, the Auxiliary being guests, March 21.

The **Nebraska Public Health Association** held its second annual meeting at Lincoln, April 15, with the following program: "Interest in Public Health", M. F. Arnholt, M. D., Lincoln; "Nutrition in Children", Miss Evelyn Blackburn, Lincoln; "Health Examination in Public Schools," B. F. Lorance, M. D., Auburn; "The Mental Hygiene of College Students", Miss Eleanora Stromquist, Kearney; Dental Hygiene", L. T. Hunt, D. D. S., Lincoln; "Tuberculosis", Miss Alice Marshell, Omaha.

The **Otoe County Medical Society,** at a meeting April 9, had as special guest Dr. R. B. Adams, secretary-treasurer of the Nebraska State Medical Association. Dr. Adams urged every practitioner of medicine to join the county and state associations, if for no other reason than that of self preservation. He cited the Basic Science law as one instance of the accomplishments of organized medicine. Dr. John C. Thompson, Lincoln, spoke on the Generalities of the Cardiac; Dr. E. W. Hancock, Lincoln, talked on the Treatment of Scarlet Fever and discussed at length the antitoxin treatment of the disease.

The semi-annual meeting of the **Third Councilor District Medical Society** was held at Beatrice under the auspices of the Gage County Medical Society, April 12, at the Paddock hotel where a six o'clock dinner was served. The following program was carried out: Medical Activities in Relation to Public Health, Dr. E. R. Hays, Falls City; Immobilization of Upper Extremity Fractures, Dr. J. E. M. Thomson, Lincoln; Spinal Anesthesia, Dr. J. W. Duncan, Omaha; Empyema, Dr. Herbert Davis, Omaha; Factors in the Diagnosis of Diabetes, Dr. F. L. Rogers, Lincoln; Lower Back Pain, Radiologically Considered, Dr. W. A. Rush, Beatrice.

The **Madison Five Counties Medical Society,** at the March meeting at the Hotel Norfolk, March 19, had as honor guest Dr. Henry Meyerding of the Mayo clinic who spoke on Bone Tumors. He stressed the danger of error in the diagnosis of bone tumors, cases similating bone cysts may be sarcoma or the reverse; provisional callous has been mistaken for bone sarcoma, etc. Dr. A. M. Sonneland, Norfolk, read a valued paper on Treatment of Varicose Veins, Injection Method. Sixty-four guests partook of the dinner.

HUMAN INTEREST TALES

Dr. G. M. Andrews, formerly of Stella, has located at Auburn.

Dr. C. E. Leisure, formerly of Shubert, has located at Dawson.

Dr. E. T. Gangster, formerly of Casper, Wyo., has located at O'Neill.

Dr. W. S. Wood has sold his interest at Dawson and is moving to California.

Dr. C. H. Campbell, Columbus, is spending four months in study in Vienna.

Dr. Chas. F. Burr, Burr, and Miss May Malsbury, Superior, were married March 4.

Dr. N. P. Nielsen of Arcadia has been added to the staff of the Norfolk State Hospital.

It is reported that Dr. Fred. W. Pfeiffer of Wheatland, Wyo., will open a clinic at Scottsbluff.

Dr. B. C. Pease, formerly of Gothenburg, more recently of California, has located at Shelton.

Dr. B. F. Gleason, Randolph, and Miss Margaret Lorge of Bowman, North Dakota, were married recently.

The Lynch General hospital is about to be closed and the work will be transferred to the Sacred Heart hospital.

Dr. G. E. Andrews has moved from Stella to Auburn, but will devote 2 days each week to his office at Stella.

A research alcove has been added to the library of the Lancaster County Medical society, the gift of Dr. J. H. Tyndale of Lincoln.

Dr. Carl Amick, Loup City, who suffered an infection in March, while operating, and who for a time was alarmingly ill, has recovered.

Dr. Ralph Thompson, Omaha, has been made a first lieutenant in the medical corps of the regular army and assigned to duty at Ft. Crook.

Dr. W. H. Wilson, formerly chief of the bureau of health, has reentered general practice and has opened an office at 506-507 First National Bank building, Lincoln.

Dr. E. A. Creighton, who has been reported as retiring on account of ill health, has decided to continue practice to a limited extent, his health having improved materially.

Dr. F. D. Pottenger, Monrovia, Calif., gave an illustrated lecture on Tuberculosis before the Lancaster Medical society, March 28, and held a clinic at the Lincoln General hospital the following morning.

Dr. John Peterson, for some months in practice at Red Cloud, has quit that field and is taking eye, ear, nose and throat work in New York, preparatory to an association with Drs. Hompes and Curtis in Lincoln.

NECROLOGY

John B. Ralph, Omaha, Nebr.; Rush Medical College, 1869; veteran of the Civil War; practitioner of Omaha from 1882 until retirement in 1914; city physician of Omaha for 18 years; member, Nebraska State Medical association; died March 29, 1929, aged eighty-seven years.

BOOKS RECEIVED

NURSES, PATIENTS and POCKETBOOKS: By May Ayres Burgess. Cloth. 16 mo. 595 pages. New York City, 1928.

IMPERATIVE TRAUMATIC SURGERY With Special Reference to AFTER-CARE AND PROGNOSIS: By C. R. G. Forrester, M. D., F. A. C. S. Cloth. 8 mo. 458 pages with 598 illustrations. Price $10.00. Paul B. Hoeber, Inc., New York, 1929.

WHAT EVERY ONE SHOULD KNOW ABOUT EYES: By F. Park Lewis, M. D. Cloth. 18 mo. 70 pages. Per copy 30c. Funk & Wagnalls Co., New York & London, 1928.

DIABETES AND ITS TREATMENT: By Frederick M. Allen, M. D. Cloth. 18 mo. 98 pages. Per copy 30c. Funk & Wagnalls Co., New York & London, 1928.

CARE OF THE MOUTH AND TEETH: By Harvey J. Burkhart, D. D. S. Cloth. 18 mo. 45 pages. Per copy 30c. Funk & Wagnalls Co., New York & London, 1928.

GETTING READY TO BE A MOTHER: By Carolyn Conant Van Blarcom, R. N.. Cloth. 8 mo. 274 pages with 82 illustrations. Price $1.75. The Macmillan Co., New York, 1929.

ANGINA PECTORIS: By Harlow Brooks, M. D. 8 mo. 148 pages. Price $2.50. Harper & Brothers Publishers, New York, 1929.

CERTIFIED MILK: By American Assn. of Medical Milk Commissions, Inc., and The Certified Milk Producers' Assn. of America., Inc. 8 mo. 328 pages. Minneapolis, Minn., June 11-12, 1928.

SPINAL ANESTHESIA: By Charles H. Evans, M. D. Cloth. 8 mo. 179 pages with 41 illustrations, 3 in color. Price $5.50. Paul B. Hoeber, Inc., New York, 1929.

DR. W. J. MAYO ON MEDICAL EDUCATION OF THE DAY

In an address given at Iowa City at the dedication of the new Medical buildings the middle of November, Dr. W. J. Mayo spoke in present day medical education and the need for reform of methods as follows:

"There is a tendency to make the profession of medicine an aristocracy. The cost of medical education, the number of years before men can be self-supporting, the age at which students are graduated, averaging about twenty-seven years, is driving many bright men into other professions. Yet investigation has shown that the student who is graduated before he is twenty-five is of greater average professional worth at the end of fifteen years than the one who is graduated after twenty-five, and I am told that those who rank in the second half in scholastic attainments at a medical college are on an average of as great professional value at the end of fifteen years as those in the first half.

The proportion of the enormous cost of medical education borne by the taxpayers or by endowed funds is three times the amount paid by the student, and this burden is carried willingly by the people for the purpose of having good physicians. I believe that the function of the medical school is to turn out medical practitioners and that the specialties should be taught after graduation in medicine. I believe that one year should be saved in our grammar schools, and that adequate cultural education should be given in the high schools, so that the premedical course might be devoted to the basic science subjects, saving two years of time, and that the medical school should devote its time to the proper education of general practitioners.

Further, I see no reason why the four-quarter system should not be adopted in high schools and colleges as well as in medical colleges. Why young people at the strongest time of their lives physically and mentally should have a vacation of three months, when the world is on the twelve-month working basis, I am unable to see. By the adoption of some such program our medical students would graduate well under the age of twenty-five, and have sufficient time to develop specialties as graduate subjects.

As one looks into the future of medical teaching, one must recognize at once the impossibility of doing more for the medical student during the time he is being educated as a general practitioner than to give him a good working knowledge of the fundamentals of clinical medicine.

In some manner there must be correlation of the work of the specialist as applied to the sick man, and this must come through well educated general practitioners. The patient cannot know what specialist he should consult and the specialist cannot know the needs of the patient beyond his specialty."

DIAGNOSIS OF EARLY UTERINE CANCER

Emil Novak, Baltimore (*Journal A. M. A.*, March 16, 1929), stresses the fact that simple pelvic examination is not sufficient in making the diagnosis in many cancer cases. The physician should, in all suspicious cases, see that cancer is ruled out. This will mean biopsy in suspicious lesions of the cervix, diagnostic curettage in suspicious bleeding from the uterus. If early cancer of the cervix is found, the patient has at least a fifty-fifty chance for cure. If early adenocarcinoma of the uterus is found, her chances of cure should be about two out of three. Any physician can diagnose late cancer, but physicians should familiarize themselves with the clinical appearance of early cancer and of cervical lesions that are to be regarded with suspicion. Even if proved benign, such lesions are important predisposing causes of cervical cancer, and their correction, usually very easy, does much to protect the patient from cancer. The danger of biopsy, if any exists, is far more than counterbalanced by the life-saving information it often yields. There is no other way of making the diagnosis in the early stages of the disease. The same statement may be made with regard to diagnostic curettage in suspicious bleeding of intra-uterine origin. Neither biopsy nor diagnostic curettage is of unqualified value, however, unless combined with competent pathologic examination. The ideal is, of course, that the surgeon himself should be a good pathologist. Although there is much discussion of the bearing on cancer mortality of such factors as the method of treatment and the histologic classification of the tumor, the fact still remains that the most important single factor is the duration of the disease. Hence the basic importance of biopsy and diagnostic curettage which are essential in the recognition of the really early stage.

LIVER EXTRACT IN TOXEMIA OF PREGNANCY

The total preeclamptic cases studied by Harold A. Miller and D. Ben Martinez, Pittsburgh (*Journal A. M. A.*, Feb. 23, 1929), number 255, of which they placed 101 in the mild group, ninety-five in the moderate group, and fifty-nine in the severe group. In this series there were eighty-four patients with nephritic toxemia, who, while not showing any improvement in the blood pressure or urinary condition, were nevertheless allowed to continue their pregnancies until they went into labor spontaneously. The authors used heparmone in the treatment of these cases. As would be expected in the treatment of any condition, the response varies with the severity of the toxemia. Even in the severe cases some improvement occurred without supplementary or symptomatic treatment, while in the moderately severe or mild cases, some were returned to a practically normal state. There are two mild reactions which may occur: (1) moderate headache for about one hour after the injection, or (2) flushing of the skin and a feeling of warmth. One anaphylactic reaction occurred when 35 cc. was given intravenously to a patient in whom an unsuspected sensitization to the drug existed. Many cases, when first seen, are in the severe group, and are so treated, afterward dropping to moderately severe or even mild toxemias, when they are treated accordingly. While the shifting from group to group is largely from the severe to the mild, an occasional case may show the reverse reaction. Four patients have developed eclampsia, one from the moderate group and three from the severe group. One fulminating toxemia proved fatal, the patient dying within ten minutes after the first convulsion. The histories of forty-five cases are published. In the mild cases, 10 cc. of heparmone was given weekly in the form of intramuscular injections; moderate cases, 10 cc. was given two or three times weekly, and in the severe cases 10 cc. was given two or three times a day until the patient was delivered. In this series the diet was not restricted. No other medication was used.

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SPECIALIZATION: ITS PRESENT STATUS AND ITS LOGICAL RELATION TO THE GENERAL PRACTICE OF MEDICINE*

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Our present highly developed and widely diversified specialties are in the main products of the last fifty years. Yet, some of them existed centuries before the Christian era. Surgery has always been the predominating specialty. It reaches back into prehistoric times and doubtless antedates even medicine. According to Boekh, it is recorded by Athotis, one of the Egyptian kings who wrote a treatise on anatomy and who reigned fifty seven hundred years before the Christian era, that surgery was practiced in his day and that surgeons were highly esteemed. Homer in the Iliad sings the praises of Machaon, the son of Aesculapius, who as military surgeon accompanied the Grecian warriors. And that the surgeon today has fallen from the high pinnacle to which he had been elevated during Homer's time is shown when Machaon had been wounded in battle and Idomenus was made to say:

> "A wise physician, skilled our wounds to heal
> Is more than armies to public weal."

Numerous writings on papyri and hieroglyphics carved in stone are sufficient evidence of the antiquity of surgery. That surgery had attained a high degree of perfection in Old Egypt is evidenced by the variety and character of the operations performed. Venesection, lithotomy, removal of tumors, reduction of dislocations and other minor and major operations are of record.

Ophthalmology, fostered by the undoubted prevalence of eye diseases which had existed in Egypt throughout all the ages, was practiced before the time of Moses, indeed, thousands of years before Christ. We read in papyri devoted to diseases of the eye that the ancient Egyptians had recognized many of the diseases known to modern medical science and had carefully classified them and minutely described their symptoms. One marvels at the knowledge of these ancient physicians when he reads their description of the symptoms of diseases well known to modern oculists as iritis, trachoma, hypopion, cataract, strabismus, chemosis, and many others. They were somewhat better in describing the symptoms than they were in treating the cause. However, they employed the salts of copper for trachoma and for a few other diseases treatment that would pass muster today.

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*President's address delivered before the annual meeting, Nebraska State Medical Association, Omaha, May 15, 1929.

The renown of the ancient Egyptian oculists spread throughout the then known world. Even down to the time of Cyrus, king of Persia in the sixth century B. C., it had not dimmed. According to Herodotus, the mother of Cambyses, the son of Cyrus, was afflicted with senile cataract. Cambyses sent to Egypt imploring Amasis, the king, to send to his mother's aid the greatest of Egyptian oculists. Nebenchari came and operated and restored her vision. It is interesting to note that out of this incident a war arose between Persia and Egypt—a very strange role for an oculist to play.

Had the ancient Greeks and Egyptians maintained the high standard to which they had brought medicine and its specialties there would now be a different story to relate. But decadence followed. The Dark Ages supervened and cast its blighting mantle over the arts and sciences. Medicine suffered most. For many centuries the employment of charms, incantations and prayers largely supplanted rational medical treatment. Surgery in the hands of the ecclesiastics, and finally prohibited by the Pope, was reduced to the lowest ebb. What little was done was in the hands of barbers, ignorant charlatans and traveling quacks. Ophthalmology and other specialties were forgotten at the wayside.

It had been so firmly established in the minds of the people that medicine was the divine art and regarded as a gift of the gods, that scientific medicine made slow progress for centuries following the Dark Ages. That the blighting influence of this belief has reached down even to our time is evidenced by the thousands of people who in the past year have flocked to that arch charlatan of South Dakota who is reputed to cure all the aches and pains the flesh is heir to by simply laying on hands; a similar scene is now being enacted within the borders of our own state.

Surgery was the first to recover from the backset it had sustained during the middle ages. But the other specialties lagged and did not reach even the degree of perfection boasted of by the ancient Egyptians until comparatively recent times. Indeed up to the middle of the last century a specialist as such was hardly known. Diseases that now fall naturally to the realm of the specialist were handled by the general physician, save in very exceptional instances.

Specialists for some years following the date just mentioned confined their activities in America only to the large cities. Up to a very recent date, however, there were cities of considerable size in which no specialist could be found who confined his practice to his specialty exclusively. Within the life of the speaker so large a city as Cincinnati, Ohio, had its first oculist locate there. But in the later part of the nineteenth century the success which attended these pioneer specialists attracted many physicians to specialism. An added impetus was given it by the establishment of free dispensaries in various cities, free clinics and special instruction in our medical colleges.

This awakened interest lead to an enormous increase in the number of specialists as well as a corresponding increase in their variety. From the larger cities they soon began to filter into smaller cities and towns. Beginning with the close of the World War so many physicians had gone into the practice of a specialty there were few towns in America of two or three thousand inhabitants or even less that could not boast of their specialists of one variety or another. According to the last edition of the American Medical Directory the number of physicians in the United States who are recognized as confining their practice to one of the various specialties is 15,941.

Inasmuch as the total number of physicians in the United States is given as 149,521 the proportion of whom are specialists is 10.7%. If we add to this, the number of physicians who in their practice favor a particular branch of medicine but do not confine their practice wholly to it, the number who are engaged wholly or partly in special practice would equal approximately twenty per cent of the total number of physicians.

The right to practice a specialty in the United States may be assumed by anyone after he has secured his doctor's degree and his license to practice medicine. In some of the countries of Europe one wishing to practice a specialty must first go before a lawfully constituted board of examiners which decides whether the applicant may or may not assume the title of specialist in the particular branch of medicine he wishes to practice. That some such requirement should be demanded of our specialists in the United States has been under discussion for several years.

The American Board of Ophthalmic Examinations, the American Board of Otolaryngology and the American College of Surgeons are doing much and will do more as time goes on to establish standards of fitness to practice these specialties and to protect the public against unqualified specialists. However, no definite steps as yet have been taken in this country to make the requirements thus far proposed compulsory. And as time passes the need of such action becomes less and less apparent. It is not to be denied, however, that for the best good there should have been some restriction placed on the assumption of the title of specialist when a number of years ago doctors too often were being awarded certificates of proficiency and were assuming the title of specialist after having completed but a few weeks course in one of the special branches.

The six weeks' course which enables a doctor to proclaim himself a specialist is a thing of the past. The glamour which formerly surrounded the specialist is fast disappearing and no longer so liable to serve as a camouflage for incompetency. The public is becoming educated along medical lines as never before and more and more becoming competent to judge a specialist in the light of his real merit. It will be demanded of tomorrow's specialist that he must possess not only adequate training but also a natural fitness for his chosen work. To meet these demands will require several years of intensive preparation. After procuring his doctor's degree he should as a rule spend a period of four or five years in general practice. Through it will be gained a practical knowledge that can be gained in no other way and the value of which in his future work can hardly be measured. Through it will also be determined his fitness. To determine his fitness is of no little importance for if he expects to reach high rank as a specialist he must possess this quality in no small measure. Then, to complete his preparation, he should spend two or three years in the capacity of assistant in a hospital devoted to his specialty or a post-graduate school taking a definite course under the guidance of competent specialists; or as an assistant in the office of a specialist, supplemented by a service in the special department of a large hospital.

The question is often asked: What does the amazing growth specialism has made in the few years it has existed tell us? Does the hand writing on the wall warn us that the ultimate result will be that the practice of medicine will be wholly assumed by a multitude of specialists and that the general physician as he is known today will have been completely submerged and will be known no more as such? Some close observers, indeed, seem to think that will be the final result or at most the general physician will be nothing more than a medical shop-walker whose occupation will be largely limited to the directing of patients to the proper specialists.

Specialization has been a necessary and inevitable result of the wonderful growth and development medical science has attained in recent years. So vast has medicine become, it would be a hopeless undertaking for any one person to try to master all of it. Hence, it has come about that specialism has assumed a very important and indispensable place in the practice of medicine. And it is a notable and deplorable fact that as the specialist has increased in favor the family doctor has decreased in prestige and usefulness.

Aside from the necessary and inevitable growth specialism has made and should make if progress is to continue, there are several factors which have contributed to the change in the relative importance of the family doctor and the specialist. One of these in a measure can be laid at the door of our medical colleges. The fundamental object of our medical schools has been and should be the education of their students for the general practice of medicine. But they have in recent years given such prominence in their curricula to the specialties that the main object of the medical education has been somewhat lost sight of.

I do not wish in any way to disparage the importance of the specialist when I say that he, in teaching medical students, has not been slow to take advantage of the opportunity especially to emphasize the importance of his particular branch. The natural result has been that the student body gains an exaggerated idea of the importance of specialism. This is evidenced by the fact that fully fifty per cent of medical students before having completed the prescribed course, have determined to go into a specialty at some future time.

The automobiles, good roads, and other improved methods of modern transportation are potent factors in the development of the specialties to the detriment of the family doctor by giving the public at considerable distances quick and comfortable access to the larger medical centers.

The importance of the family doctors has been greatly weakened also by the increase in knowledge of medical matters by the laity. In time past when one became a sufferer from a disease of whatever nature he first consulted his family doctor who then determined whether it was a case he could handle or whether it should be sent to a specialist. Now the discriminating public in too many instances ignores the family doctor by going directly to the specialist.

The general physician for a time was swept off his feet and greatly bewildered on account of the sudden growth of the specialties and his apparent loss of standing and patronage. He awoke to find every region of the human body preempted and staked off. What had formerly been his sole care had apparently been taken over by specially trained doctors. He not only wondered what finally would be left for him to do but what the present status of his medical activities really was. He failed to fully realize and appreciate the fact that it was but the natural result of modern advance in medical science and a part of an orderly well-organized and highly developed battle front against the hosts of disease and that he, whether he realized it or not, still did and should occupy the position of commanding officer and that he alone was responsible for the preservation of cohesion and harmony in the forces marshaled against disease.

The brilliant and somewhat spectacular success which has attended the newly ordered specialist, he feels has so overshadowed the age-long regard in which he has been held by the laity that it has been noticeable, he has unconsciously developed in a measure what for the lack of a better term we may call an inferiority complex. There should be no doubt as to the position he holds in medical activities. He should and it is my opinion always will hold the commanding place. This position is the keystone of the arch and should it be removed and the work parceled out among numerous specialists, an intolerable confusion would follow and the best in medicine would be lost.

The intimate relation which the family doctor holds to his patients over a long period of years gives him a knowledge which cannot be gained by any one else and the usefulness of which cannot be overestimated when he is called upon to treat them. The importance of this is aptly expressed by Dr. Oliver Wendell Holmes in his story "Elsie Venner" where Dr. Kitteridge says: "I know these people about here, fathers and mothers, and children and grandchildren, so as all the science in the world can't know them without it takes time about it, and sees them grow up and grow old and how the wear and tear of life comes to them. You can't tell a horse by driving him once, Mr. Langdon, nor a patient by talking half an hour with him."

There should be no quarrel between the specialist and the family doctor. There is enough for each to do. The competent general physician should still be able to treat 80 to 90 per cent of the cases that come to him. And there is no reason why he should not treat the diseases commonly classed as belonging to the province of one of the specialties if he so chooses, providing he can treat them as skillfully as the specialist. The growth of specialism has not been so much at the expense of the family doctor as it might seem. The larger part of what the specialist is called upon to do at the present time was not assumed by the family doctor in former years and never can be assumed by him unless he receives special training. What little goes to the specialist is more than balanced by the new fields of activities opened to him and new duties imposed upon him through the natural trend of modern medicine.

That an evolution in medical practice has taken place in the past few years is apparent to all. But the family doctor has been slow to accept this change and make the best of it. No longer does his reputation wholly depend upon his ability to diagnose and cure disease but he must have the ability to prevent it if he wishes to sustain his reputation. Therefore, he should be the chief exponent and executor of hygiene. Here is a wide and fertile field that can be profitably cultivated if one chooses. In his hands also rests the success of Periodic Health Examination which has now been before the public for sometime and towards which I fear he has been too lukewarm. Not only should he give it his wholehearted support but also his earnest advocacy at every opportunity. He will play the important role in carrying out the provisions of these examinations and the total benefit that will accrue not only to the public but to the doctor as well if these examinations become universal, cannot be fully visualized, even if only two of the resulting benefits are counted, namely, the opportunity to discover unsuspected disease and also the very beginning of disease. It is hardly necessary to mention that if these examinations are to be popularized, they should be taken seriously and always carefully and searchingly made.

There are other avenues which modern medicine has opened that need not be discussed here. The wise physician will not ignore them but will prepare himself to do this new work efficiently if he wishes to increase his income and prestige.

"The old order endeth" in medical practice. The new order is at hand. The family doctor is about to take his proper place in carrying it forward. Now that he has discarded many of the past fallacies and with a new understanding faces the realities of the present and future neither group practice nor the specialist will keep him from assuming the close relation which formerly existed between the physician and his patients. He will continue to carry on and keep alive the traditions of innumerable doctors who have gone before.

FUNCTIONS OF THE LIVER*

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This morning Dr. Rowntree told you frankly that he and his associates could use very little of the data that had been gathered concerning the physiology of the liver. I shall go further and tell you that probably nothing I say to you tonight concerning the physiology of the liver can be used on the patient. The justification for presenting material which does not have a certain amount of practical benefit lies in the fact that on such facts must the future of medicine be based. While I am frank to say that probably little if anything I shall say can be used in the practice of medicine today, I am also frank to say that I believe that within a short period of time some of it can be used in practice. This great organ, the liver, plays such an important part in the physiologic activity of the organism, and has so many things to do, that I am quite sure many of them sooner or later will touch practical medicine.

In order to understand some of the fundamental principles of the physiology of the liver, it is necessary to review a few pertinent anatomic facts which everyone learned in school, but which did not become a part of the physician's everyday knowledge. Of course, the first thing one recalls in discussing the liver is its large size. It is the largest organ in the body. There is only one other mass of homogeneous tissue larger than the mass of the liver, that is, the voluntary muscles. This is of importance, and again I would not be surprised if the voluntary muscles prove to have more than a mere motor part to play. They may bear to metabolism a relationship which is of greater importance than the production of heat and mechanical energy for the rest of the body. Concerning the liver, first, then, is its size. Second, it has a double blood supply. One of these is under low pressure, is venous in origin, and comes from the part of the body which carries food products to the rest of the system. The liver has another blood supply, arterial in origin, that differs in no way from the blood supply to other organs. Since the vasomotor nerves control the blood supply, possibly the significance of the portal circulation that I have emphasized, that its purpose is to carry food products from the intestine to the liver, may not be as great as is implied. It is difficult to show that a substance injected into the portal vein is acted on more quickly than if injected into a systemic vein.

There are three important cells characteristic of the liver that are not found in any other organ. I refer first to the hepatic cell. Second, there is the stellate cell, that is included as one of the important constituents of the reticulo-epithelial system: and third, the particular type of cell that lines the biliary canal. I am not sure but that these last cells have a function that is not wholly concerned with lining the biliary canal. The basis for this suspicion rests in the fact that under certain conditions these cells become filled with fat droplets, a change not readily observed in other, similar cells.

Histologically the liver is organized on two bases: First, the portal lobule, which emphasizes the fact that the liver is a gland, producing an external secretion, and second, the hepatic lobule which emphasizes the fact that the liver has something to do with the exchange of products in the blood. The real unit, however, consists of a simple double celled trabecula with a blood sinus on each side. For the purpose of considering the organ physiologically the two units may be kept in mind: One emphasizes the production of an external secretion; the other, that it has something to do wtih the elaboration of products which pass to and from the blood stream. So much for the few anatomic facts one should carry in mind.

The liver is characterized by some fundamental reactions. One is probably in exaggerated form; no other organ has it in the same degree; that is, the ability of restoration after injury. Many years ago the fact was pointed out that when an animal was given chloroform injury might involve a large portion of the liver, and that in a few days it would be perfectly restored. Also, in mythology, when Zeus became jealous of Prometheus and tied him to a rock and had a vulture daily consume his liver, it grew again each night. Somebody in that day knew something of the liver, because I do not know of any other organ of which it could have been said, and hold true, that it is restored so readily after injury.

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*Read before the Missouri Valley Medical Association, Omaha, Nebraska, October 31, 1928.

The liver of the dog has five distinct lobes. It is easy to take out a lobe, approximately 30 per cent of the total amount. In a few weeks the animal has as much liver as before operation. It is not regenerated in the same way as a tadpole's tail. I use the term "restoration." I will not even say "physiologic compensation": it is a restoration. Hepatic tissue is not restored by the growing out of a new lobe, but by increase in the lobes that remain. The edges of the normal liver are replaced with rounded edges.

Now, we have taken out 30 per cent and it has been restored to normal. We take out another lobe and in a few more weeks a normal amount of liver has been restored. This can be repeated until only one lobe remains. By that time more liver has been removed than the animal had originally, and the amount remaining is as great as the normal amount; so that the mythologic story holds true.

Although this particular organ has the ability to be restored more than any other organ the restored hepatic tissue may not have a normal physiologic capacity. We are obtaining some evidence in regard to this question. The restored hepatic tissue does not appear to withstand the same strain that can be withstood by normal hepatic tissue. We took out all except one lobe of the liver of a dog and in about a year he suddenly died. At necropsy, the liver was twice the size of a normal dog's liver. On histologic examination, however, only a few of the cells appeared to be normal hepatic cells.

The function of the liver which interests most clinicians because it is the function that deals with two of the three important clinical conditions associated with the liver, is the secretion of bile. There are a few things we know concerning the secretion of bile, and the stimulation that calls it forth. Bile is secreted continuously, but the rate varies a great deal and depends on the activity of the gastro-intestinal tract. We do not know the relationship between the activity of the gastro-intestinal tract and the liver. It may be explained on a basis similar to that on which Dr. Ivy has just explained the activity of the gallbladder. As yet, however, it is an unsolved problem.

Bile contains many constituents, three of the most important of which are bile acids, bile pigment, and cholesterol. The latter is of importance to the surgeon, because a high percentage of his operations are due to the fact that the physiologic processes concerning this particular substance have gone wrong. As far as the origin of the cholesterol found in the bile is concerned, little is known. It is not known whether the liver makes it, nor is its hepatic function known.

The next important constituents of bile are the bile acids. They have two distinct functions. One has to do with preparation of the fat for absorption: the other, so far as I know, is to stimulate the liver to increase the secretion of bile. At least bile salts are the only substances formed within the body which will so stimulate the liver. The evidence so far points to the fact that these substances are made in the liver by the liver, although the evidence is not conclusive.

The third important constituent of bile is bile pigment. It appears to be an excretory product. It apparently is not used after being formed. It is made from hemoglobin. So far as we know, no other substance will give rise to bilirubin. Most of our knowledge concerning bilirubin is organized about the fact that it is made in the liver. Here for once I must confess the liver is not of the importance we used to think it was. Most of the bile pigment probably is not made in the liver. Certainly in the normal dog the percentage made in the liver is small. Most of the bile pigment is formed in the bone marrow.

So much for the secretion of bile. Clinically, it is an important function. Physiologically, it is not as important as some of the other hepatic functions. The most important known function is that which has to do with carbohydrate metabolism. Claude Bernard introduced investigations to this function when he found glycogen in the liver. The principal function of the liver does not rest so much in its ability to make and store glycogen. Its important function is to regulate the concentration of sugar in the blood. We have come to realize that among the so-called physiologic constants certain constant figures for blood pressure, the number of red cells, hemoglobin and so forth we must include the maintenance of the level of blood sugar within fairly definite and rather narrow limits. In other words, for the organism to live and maintain its physiologic equilibrium, it is necessary for a certain amount of sugar to be circulated through the tissue constantly. The liver provides for the constant supply of this sugar. This is a vital function; without it, the organism quickly will die. How the liver performs this function and what mechanism is involved, we do not know. I am quite sure all of the present theories that have to do with control by the liver of the amount of sugar in the blood are not wholly correct as they do not explain all the facts.

Not only is the liver responsible for maintenance of this narrow margin of concentration of sugar in the blood, but also for the increase that may occur. There are two conditions in which blood sugar is increased. The one in which physicians are most interested is diabetes, or the hyperglycemia that follows removal of the pancreas. There are also the hyperglycemias that follow certain disturbances, such as the action of certain drugs. The liver is responsible for these increases in blood sugar just as it is responsible for the maintenance of the normal level of blood sugar. If the pancreas is removed from an animal in about two days its blood sugar reaches a constant high level. If, then, the liver also is removed, the level of blood sugar decreases to that of a normal animal. If the liver is removed from an animal, such substances as epinephrine will not produce an increase in the blood sugar. All of these processes depend on the liver. Therefore, when the physician states that his patient with diabetes has a certain blood sugar, the maintenance of that concentration is governed by the liver.

Another hepatic relationship to carbohydrate metabolism is the storage of sugar in the liver. It was discovered to contain a substance, glycogen, which was found also stored in the muscles. The amount stored in the normal organism in muscle and liver is about the same, although the concentration varies. The substances are the same. But the fate of the glycogen which is stored in the liver and that which is stored in the muscle is entirely different. That which is found in the liver is used for the maintenance of this vital function, control of the blood sugar level. If our work on a hepatized animal is to be accepted, the amount of glucose the liver must add to the blood stream is quite large. In an animal without its liver, it is necessary to give 0.25 gm of glucose for each kilogram of body weight each hour. The glycogen stored in the liver certainly is used during the periods in which there is no ingestion of food for the maintenance of this level of glucose in the blood.

However, so far, there is no evidence that the glycogen stored in the muscle is used to maintain sugar in the blood. It might be considered that this glycogen is formed in the muscle for "home consumption". The muscle uses it itself. While it is possible that some is used to maintain the blood sugar, as yet we have no proof of this. A dehepatized animal will die in a condition of hypoglycemia, with an amount of glycogen in its muscles that, if converted to glucose, would maintain it for many hours.

The second important food stuff in the metabolism of which the liver is of importance is protein. When protein food is taken into the body, it may have one of three possible fates. First, a certain amount of it is used to build up the body protein. The growing animal must have a comparatively large amount that is thus used but the mechanism is not known. No one questions the fact that cells are replaced, and it takes protein or nitrogen food products to replace them. The second possibility is that a certain amount of it is changed, in all probability, and is used as storage protein, the so-called deposit protein of the body. There is evidence that some of it is stored in the liver. The third fate of the ingested protein food, and the one that befalls probably most of it, is that the nitrogen portion is removed, deaminized, and excreted in the form of urea; the rest is used as carbohydrate.

The liver has nothing to do specifically with the first course that protein may take. The liver may have something to do, however, with the second fate of protein; it may act as a store house of deposit protein. The liver is essential for the third course that protein may take; the process of splitting off of the nitrogenous part of the amino acid as well as the resynthesis of this into urea depends on the liver. Neither of these processes occurs in the liverless animal.

When physicians talk about retention of urea in renal disease they should think that the liver is essential for the production of this substance, and that production of it is not a function of the kidney. It may be that with this idea in mind some of the unsolved puzzles concerning retention of urea may be solved.

One word in regard to the detoxicating function of the liver. We do not know much about it. If we mean a function whereby the liver takes a substance and makes it harmless in the same way in which a detoxicant is supposed to neutralize the toxin, this has not been proved to be a function of the liver. If we consider that the liver protects the body from certain toxic substances, it is true. How it accomplishes this protection we do not know. One of the best methods we have developed to determine hepatic injury has to do with this function.

We can give to normal dogs certain substances, such as ammonia, in standard amount and they will not affect the dog; but if the substances are given to dogs with injured livers, they will cause severe reactions. If we are careful in the dosage we can judge the amount of injury to the liver by the reaction which occurs. A dose which we know would not produce symptoms in a normal dog will kill a dog with a badly injured liver.

If one wished to carry over the things he had learned concerning the physiologic activity of the liver and wished to make his knowledge of significance in clinical medicine, it would be necessary to study animals in which the hepatic function had been reduced. For a while to reduce the function of the liver was a difficult procedure due to the fact that the liver has this seemingly unlimited power to be restored. There are certain conditions under which the liver cannot restore itself. One of these conditions is obtained by shunting the portal blood around the liver; another by producing biliary obstruction; and a third, by producing cirrhosis. When removal of a portion of the liver is preceded by any of these measures it is not followed by restoration of hepatic tissue, or only to a slight degree. It has thus been possible to reduce a dog's liver to an estimated 15 per cent of the normal amount. Such an animal appears to get along perfectly well and it is difficult to determine that it is not normal as regards hepatic activity, except in one regard. It is essential to keep these animals alive by maintaining them on a carbohydrate diet. They will not tolerate a high protein diet.

Studies on these animals of which the hepatic tissue had been reduced have shown that these fundamental processes, maintaining the blood sugar level, deaminization, the formation of urea, and so forth, are carried on very well. It is with great difficulty, by a study of these processes, that it can be determined that the liver has been injured even though the animal does not have more than an estimated eighth of the amount of hepatic capacity it had before.

If I were to leave any word which it might be possible to use clinically, I would say that physicians can best protect patients with hepatic disease by strict attention to the kind of food the patients eat. I think that will apply to the patient with cirrhosis just as to the dog. The patient can be protected by making it easy for the liver to have available a suitable amount of carbohydrate; the body can be protected by not giving too much protein.

The liver has a number of functions of which investigators are just becoming aware. It is known that dogs with a decreased amount of hepatic tissue are not normal. They are poor operative risks. As nearly as can be told from general functional tests or general physiologic activity of the liver, these dogs are normal animals. It is hoped that more may be found out about these so-called subtle functions of the liver which may have to do considerably with surgical patients. For this reason, it is planned to continue the work, particularly in regard to studies on animals with reduced hepatic tissue.

TUMORS OF THE BLADDER*

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Tumors of the bladder occur both in primitive races and in the lower animals. In his studies of cancer among the North American Indians, Hoffman(1) has reported a number of cases of cancer of the bladder. Cases of papilloma, sarcoma and carcinoma, as well as myxoma and fibroma, have been reported in various domestic animals, including dogs, horses, cattle and hogs. It is not, therefore, a condition which can be attributed to so-called civilization. Occupation does not seem, as a rule, to be a factor in the causation of these tumors, although papillomata are said to occur more frequently in anilin dye workers. The urinary bladder is not subjected to traumatism in the same way as are the pylorus and the large intestines, and chronic irritation would seem, therefore, to be a doubtful factor in causation. Until we can know more specifically the exact cause of these tumor formations, we cannot apply prophylactic measures.

Tumors of the urinary bladder are classified as benign and malignant, but they are all potentially malignant, for they all show a tendency to recur; and although the tumors in a certain group are histologically innocent, their repeated recurrence may destroy life by causing damage to the function of the upper urinary tract. Again, the recurrent tumors may change from a histologically benign to a histologically malignant type of growth. In one case in my series a papillary carcinoma appeared 17 years after a benign papilloma had been excised, in another a squamous-cell carcinoma followed a benign papilloma after an interval of three years, and in a third an epidermoid carcinoma followed a benign papilloma after three years. In the majority of cases papillomatous tumors—especially those that occur singly—can be destroyed and will not recur, but tumors that appear in multiple form show a greater tendency to recurrence. I think we are safe in saying that multiple tumors recur in 20 per cent of the cases. Dr. Edwin Beer says: "For one of the strange peculiarities of bladder papillomata is their tendency to recur in a new site in the bladder, with a tumor springing up *de novo* perhaps years after its original growths have been destroyed. Moreover, it is no rarity to see the character of these new tumors varying greatly in degree of malignancy from the original growth."

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*Read before the Sectional Meeting, American College of Surgeons, Lincoln, Nebr., March 15, 1929.

Removal of the tumors by cautery or excision does not remove the cause or condition in the bladder which produced the primary growths. A recheck must be made often, and the first evidence of recurrence must be dealt with summarily. I have the impression that these papillomatous tumors are more likely to recur in young patients than in older ones. In one of my cases, that of a patient 16 years of age, the tumor recurred in less than one year after the removal of the initial growth, and there were 11 other recurrences during the following 11 years. Again, the tumor may recur after considerable time has elapsed. I have had several cases in which the tumor was completely destroyed and showed no signs of recurrence for a period of three years—the patient coming in for reexamination every 6 months, and yet the growth recurred later. In one case in particular, two years after the three-year-period had elapsed, a definite tumor was again found to be present. That is the reason why the histologically benign tumors cannot be classed as entirely innocent.

Benign tumors may attain a large size before they cause any symptoms. I have found tumors as large as walnuts which had not caused any discomfort, and it was only the presence of gross blood in the urine that aroused the patient's suspicion that something might be wrong. Of course, the location of the tumor is responsible for the presence or absence of symptoms. A tumor near the urethral or a ureteral orifice may cause symptoms of obstruction to appear early, while those which are near the top of the bladder may grow large without causing any discomfort.

The significance of hematuria has so often been emphasized that a repetition of this warning would seem to be superfluous. Yet we repeatedly see patients who have been treated for bleeding without having had a single cystoscopic examination or, in fact, a scientific examination of any kind. The abiding faith in drug therapy—especially in the group of hemostatic agents, the merits of which are so forcefully presented by the high-pressure salesman of drug dispensers, still keeps too large a percentage of our profession from investigating the cause of the hematuria, and I may say that this is not confined to the lesser lights only, but is true of some of the more luminous bodies! If one will just educate his conscience to remember that blood in the urine is never physiological but always pathological, he will not fall so easy a prey to this error.

The great majority of bladder tumors are clinically and histologically malignant. In our own series the ratio of malignant to benign tumors was 2:1. The diagnosis cannot always be absolutely established before removal, either by cystoscopic examination or by biopsy; in the great majority of cases, however, the cystoscopic picture will give evidence from which the tumor can be classified, and from this and the history of the case a positive diagnosis may be made.

An unusual type of tumor will occasionally be found, one which may offer some difficulty in classification to those who have not had experience with it, that is, the so-called inflammatory tumor. A report(2) of such tumors has recently been made by my associate in Western Reserve University, Dr. Joelson, and myself. We discussed these tumors and gave illustrations. I have seen several cases of this type since that report was made.

Tuberculoma of the bladder and ulceration of the bladder following radium treatment for a carcinoma of the cervix often closely resemble cancer of the bladder.

Various histological classifications of malignant tumors have been made, but for purposes of treatment the only distinction which needs to be drawn is between the infiltrating and the non-infiltrating types, that is, between those which infiltrate the bladder wall extensively and those which grow more upon its surface.

When papillomata are accessible and not too large, the preferred treatment is fulguration, but in some cases—and this must be determined by the individual observer—it is preferable to open the bladder and then to excise or cauterize the growth, as may seem best. In cases of multiple tumors I have found the soldering iron to be a very successful and convenient means of destroying these tumors. It must be remembered that cells of papillomatous tumors are easily transplanted, and every care must be taken to keep the growth from coming in contact with the cut surface. In the case of pedunculated growths I have used a V-shaped flexible retractor for exposing the pedicle and in that way have avoided the use of any crushing forceps.

In these cases of benign tumors of the bladder frequent rechecks over a long period of time are necessary in order to anticipate and treat early recurrences. Unfortunately it is often hard to persuade the patients to return for these periodic examinations.

The histologically malignant type of bladder tumor presents a somewhat different problem, for these tumors metastasize to the adjacent lymph glands or the metastasis may occur at distant points. I have had one case in which there was a metastasis to the brain. This case was in a man 48 years of age. A carcinoma of the bladder was excised and radon implants made; two months later a papillary adenocarcinoma was removed from the right internal capsule of the brain by Dr. Dandy. At the time of the original operation a slight blurring of the speech and paralysis had been noted, so that a metastasis to the brain had been suspected.

Of the operative procedures for malignant tumors, wide resection still offers the best results in the early cases. If surgical treatment is undertaken, it must be done carefully and most thoroughly, the growth must be widely removed and all involved tissue cut away, and this must be followed by such plastic work as may be necessary.

Complete cystectomy, while theoretically a correct procedure, practically has not given results striking enough to warrant its general practice, although I have a few cases in which the patients have been comfortable for several years following this operation.

In the treatment of the infiltrating type of tumor, opinion is divided as to whether or not surgery offers as much as radiation. Until about three years ago I was strongly in favor of radical operation in all types of cases, but I feel less certain now, and believe that in the treatment of the infiltrating type of tumor radiation may offer more than radical surgery for the following reasons: (1) The immediate mortality rate is lower, for if radical operation is done and possibly transplantation of the ureter and resection of half of the bladder, there is considerable operative risk; (2) the prolongation of life is probably greater, and (3) what we may call the "economic result" is better, that is, the degree of economic usefulness of the patients is higher. My conversion has come about through the opportunity of making comparisons of results in our own groups of cases. I first transferred for x-ray treatment only those patients in whom recurrent growths developed early and the condition seemed for various reasons inoperable. The surprising results that followed in some of these cases led me to try x-ray therapy as the primary treatment in certain cases, that is, we used irradiation without a preliminary operation. I am beginning to believe that the results may be as good in many of these cases as those secured by radical operation.

These results have come about by the more scientific application of the x-rays. Formerly these treatments were given in connection with the diagnostic x-ray work, but we now have a separate x-ray therapy department under the direction of Dr. Portmann and Dr. Glasser, a physicist, who devote their time exclusively to clinical and experimental research in radiology. As in the case of the operating surgeon, his large clinical experience and observations have enabled Dr. Portmann to give us results which we did not obtain in the earlier years of this work. If I had to go back to the old slipshod method of administering x-ray therapy, I should again operate in all cases.

Let me cite the histories of a few cases chosen from a large series, for in that way I can best give you some of the reasons for my change of mind.

Case 1. This patient, a man 76 years of age, was admitted in July, 1927. He complained of nocturia and bleeding on urination, these symptoms having been present for about two or three months. There was no pain or burning on urination. Cystoscopic examination showed a rather general enlargement of the prostate. On the left side of the bladder, involving the sphincter margin, there was a large sloughing growth which was considered to be a carcinoma. Because of his age and the extent of the growth it was thought unwise to operate.

Two courses of x-ray therapy were given. All the symptoms disappeared, the patient has gained in weight, he looks very well, and so far as can be ascertained, there is no evidence of malignant disease. The patient refuses to have further cystoscopic examinations.

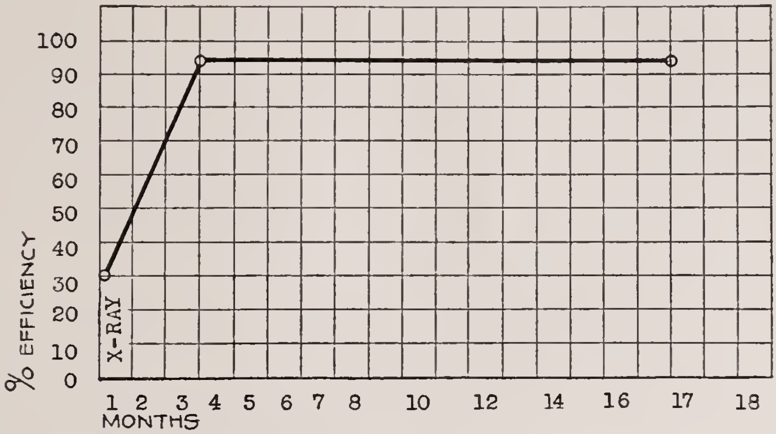

Fig. I, Case I. "Efficiency Chart" showing the improvement in general health and economic status following treatment with x-rays in a case of tumor of the bladder in which operation was contra-indicated by the age of the patient and the extent of the growth.

Case II. This patient, a woman 69 years of age, was admitted in December, 1926. Cystoscopic examination showed a large tumor near the left ureteral orifice.

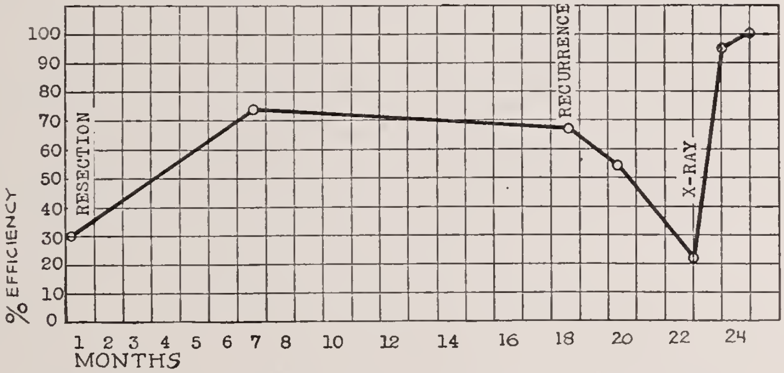

Fig. II, Case II. "Efficiency Chart" showing improvement in general health and economic status following treatment in a case of papillary carcinoma of the bladder, first by resection of the tumor and later, after the growth had recurred, by x-rays.

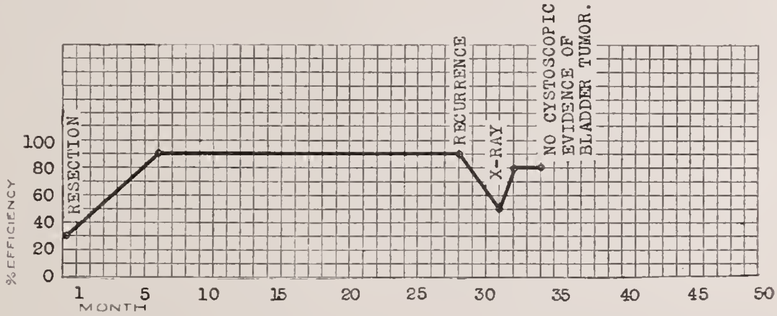

Fig. III. Case III. "Efficiency Chart" showing improvement in general health and economic status following treatment in a case of papillary carcinoma of the bladder. The tumor was first resected and x-rays were used following recurrence of the growth.

At operation a large, fungating, vascular, papillomatous tumor was found on the posterior lateral aspect of the bladder. Microscopic examination proved it to be papillary carcinoma. The growth was excised and the patient made satisfactory progress for about 10 months. A cystoscopic examination at this time showed a definite recurrence of the growth, and the patient was suffering greatly from pain and frequency of urination.

X-ray treatment was administered and since the treatment the patient has been without pain, the frequency of urination has been much less marked, and the condition of the bladder has been almost normal.

Case III. This patient, a man 52 years of age, was admitted in January, 1926. Cystoscopic examination showed a definite irregular tumor about the size of a hazelnut in the center of the bladder.

At operation the tumor was found to be friable and vascular. It was removed in its entirety, and proved to be a papillary carcinoma. The patient remained well for about 2½ years; there was then a

> recurrence of the growth in the bladder and a growth in the abdominal wound.
>
> X-ray therapy was given and there was immediate marked improvement. Cystoscopic examination showed the bladder to be in much better condition than before, although there was a suspicious area at the top of the bladder. At the bottom, the site of the original recurrence, the tumor had almost entirely disappeared. Another course of x-ray therapy was given and a cystoscopic examination made two months after this treatment showed the bladder capacity to be 300 cc and the bladder free from any sign of new growth. This patient is now perfectly well and is able to carry on his work. There is still no evidence of recurrence of the cancer.

Our own series of cases of tumors of the bladder consists of 497 cases, 167 of benign and 330 of malignant tumors. Among the 330 cases of malignant tumors, 302 were cases of primary cancer of the bladder, one of sarcoma and one of myxoma, while in 26 the bladder tumor was secondary to growths in the prostate, cervix, uterus, rectum, the vesico-vaginal septum, and the sigmoid. As for sex incidence, the ratio of the cases in men to those in women in our series was about 3½ to 1.

In the cases of malignant tumors I have transplanted the ureters 28 times, in 11 cases into the intestine and in 17 cases into the bladder.

The percentage of so-called cures in which the patients have remained well for over 3 years and for periods up to 18 years, is about 26 per cent of the traced cases (52 cases). While not so very high, these results compare favorably with the results of treatment of cancer at other sites.

Dr. Portmann has summed up the results of x-ray treatment of cancer of the bladder as follows:

"In those cases in which the patient's condition is inoperable, no treatment is given, or treatment is refused, the average duration of life from the onset of the symptoms is 9 months. In those cases in which the condition is inoperable and treatment with x-rays is given, the average duration of life is 18 months, while several of these patients are still living and have passed the two-year period. A statement concerning the results of irradiation in the treatment of malignant growths of the bladder must be entirely comparative, however; that is, it must be based on clinical observation.

"While the desideratum is a complete cure, no one can say just what constitutes a complete cure in cancer, since recurrence may occur so very late in some cases. For this reason it seems well to consider results from another angle, that is, from the economic value of treatment. It is not years alone that count in results, but the comfort secured and the ability to carry on."

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PRACTICAL SURGERY (Continued)

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THE PROGNOSIS IN CANCER, WITH SPECIAL REFERENCE TO CANCER OF THE BREAST

Notwithstanding the praiseworthy efforts of the Societies for the Control of Cancer throughout the world, the disease is increasing in frequency; in fact, is outstripping our efforts to prevent, control, and cure. The death rate from cancer in our neighbor state of Iowa last year, was only second to that of heart disease. Failure to cure is not to be wondered at by those whose position affords them opportunities to see much of external cancer, the only form that should nearly always admit of an early diagnosis with a fair prospect of cure. However, this is not the case. Yesterday I examined two women in the University Hospital, just admitted with advanced cancer of the breast, one positively inoperable from the viewpoint of material benefit, and the day before a patient in the Clarkson Hospital, an advanced cancer of the breast. None of these women had consulted a physion until a few days before coming to the hospital. This is a very common experience with me, and, of course, with others too. Dr. Burton Lee of New York recently told us here that in the Memorial Hospital, New York, (Cancer Hospital), it was a very common observation to have women present themselves with advanced cancer of the breast, who had never been seen by a physician, and to the shame of the Profession many who had had abortive operative procedures done which, as we all know, are insults to those of us who are awake, and murderous assaults upon the victims of the disease. Women have told me many times that it was not efforts of concealment, ignorance, or indifference that caused them to delay consulting a physician, but that the tumors were only discovered accidentally, that too, when the disease was already well advanced. It is a fact that cancer of the breast, as a rule, does not cause pain until it must have been present often many months. On the other hand, cancer of the face, lip, tongue and mouth, because of the early tendency to disfigurement, discomfort, and pain, leads the individual to seek professional advice. In spite of the great assistance given by the x-ray in visualizing and photographing the hollow viscera, and our increased knowledge of the pathology of the living, intra-abdominal cancer is still a field which offers many difficulties of early diagnosis.

As Dr. Wm. B. Coley truly says: "The early diagnosis of a malignant tumor is often attended with the greatest difficulty, even in the hands of experts who have had a large experience with cancer. Therefore, we can hardly expect the general practitioner who sees very few cases of cancer to make an early diagnosis." All the more reason that clinics should be established to train physicians in the early recognition of cancer. Thus, maybe, individuals in the cancer age will from time to time, at least semi-annually, consult their family physician who has acquired the necessary knowledge, so that these periodic examinations will result in the early detection of cancer should it develop, and it does in one out of every ten people who reach and advance beyond middle life.

Dr. W. J. Mayo (Mayo Clinic Staff Meeting) says, in studying his experience, that "In countries that compile trustworthy statistics the incidence of cancer is approximately in the same ratio as to population and sex, but there is considerable divergence in the organs and tissues involved. About thirty per cent of the total deaths from cancer among women is due to cancer of the breast and genitalia. The genitalia of the male show a very low incidence of cancer. On the basis of cancer of the generative organs, therefore, one would expect the total incidence of cancer in men to be considerably lower than in women, but the percentage is approximately the same because in men the organs common to both sexes, such as the stomach and the organs of the urinary system, are more frequently affected by cancer than in women, and this frequency is equal to the frequency with which the breast and uterus are the seat of cancer in women."

Ten out of every hundred men who live to middle life will die of some form of cancer, the incidence being still higher among women. Statistics show that cancer of the breast and uterus among white women is more common than among negro women, but in Omaha where we have a segregated negro population of about 15,000, my observation is that we are seeing in the University and County hospitals an increasing number of these unfortunate sufferers. Most carefully compiled vital statistics of the State of Pennsylvania for 1927, show that there were 810 deaths from cancer of the breast in women, six in men. There were 130 deaths from cancer of the breast in single women over thirty-five years of age, giving a death-rate of 109 per 100,000; there were 678 deaths from cancer of the breast among married women, with a death-rate of 44 per 100,000. Cancer of the breast in single women was, therefore, nearly three times more prevalent in Pennsylvania than among married women.*

It is estimated that approximately 7% of the women of Pennsylvania over 35 years of age during 1927, were single and had the above given cancer death rates. As the deaths from cancer of the breast in this series of cases were two and one-half times more prevalent proportionally, among the women who were single than among those who had been married, it is evident that lactation has no influence on the production of cancer.

PROGNOSIS APART FROM OPERATION

What are my chances of life after the operation? How long will I live? Will the cancer return? Often we are asked this question and we never really know the answer. We always endeavor to be reassuring. After the operation and the specimen is thoroughly examined by competent pathologists, a rather fair estimate as to the virulence of the tumor can be given, and an estimate made as to whether the patient will live one, three, five, or perhaps many years. But what can we say before the operation, and is it always wise to operate?

I feel that experience has taught me much and that in many instances a fair prognosis can be estimated from clinical data which is certainly in a great degree as dependable as that the pathologist after operation. I know that certain individuals, the victims of certain types of cancer, are better not operated upon; they will suffer less and live longer with the tumor unmolested. The worst cases may run a fatal course in three months. For many years I have been studying my cases of breast cancer and the results of operation, and have been strongly impressed that certain clinical facts other than those emphasized by text-book writers have influenced the prognosis. I have weighed the evidence of my own experience and have definite opinions as to prognosis. Of course, I have been ever mindful of the opinions advanced of late years (Wilson, McCarthy, Broders, Greenough, and others) by cultivated, experienced pathologists. It is with much satisfaction that I have learned that Dr. Burton Lee of the Memorial Hospital (Cancer Hospital), New York City, has worked out what he calls a *Clinical Index of Malignancy* based upon the factors of whether the growth was relatively benign, moderately malignant, or highly malignant, and these are determined by the age of the patient, whether or not there was lactation. The rate of growth, slow, moderate, or rapid. The extent of disease, viz., small or large, enlarged glands palpable. Whether or not there was pain. A small, only perceptibly or very slowly growing scirrhus tumor in an elderly woman of spare build, no nodes perceptible, is a very favorable case for operation, with good prognosis as to non-recurrence. If the breast is atrophic, the tumor will most likely not grow. In the aged woman such a condition had better be let alone.

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*Cancer of the Breast, a Statistical Study in Pennsylvania. H. B. Wood. Medical Journal and Record. Dec. 5, 1928.

If the whole breast is involved as in one of the patients referred to in the University hospital, if the swelling is large, the skin generally adherent, with a reddish blush, glands palpable in the axilla, but not necessarily, such a case is inoperable except as a temporizing, sanitary measure, and strange to note, in this particular instance, although the growth has existed six months, there is practically no pain, and to date no general disturbance of health, yet it is almost a certainty that the woman will live less than one year. It is a case for the radiologist, not that he can cure, but most certainly the pain which is surely coming may in a measure be relieved. It may be wise to do a "dinner-plate" operation in anticipation of the breaking down of the enormously infiltrated breast, which is about to take place.

In order to evaluate the "clinical index of malignancy" as affecting the prognosis in cases of cancer of the breast, before operation, compared to the prognosis based upon the microscopical study of specimens removed after operation (McCarthy, Broders), the after histories of one hundred cases of each class were studied for five years and it was determined that in this comparative study of two hundred cases of cancer of the breast, that a slightly more accurate prognosis could be arrived at by a careful consideration of the clinical facts, than was arrived at by a microscopical study of specimens removed at operation. As an example, the late Dr. John B. Murphy expressed the opinion based upon his exceptional experience that the woman "fair, fat, and forty" always succumbed, never had a reasonably long freedom from recurrence after an operation for cancer of the breast, and that has been my own observation. There are, of course, exceptions, but youth (forty years of age and under), excess of fat, rapid growth of tumor with a tendency to extend and become a fixed growth anchoring to the skin above, the fascia and muscle beneath, one or both, such a growth almost invariably has spread by permeation either to the axilla, supra clavicular glands, mediastinum, or liver. Varying degrees of malignancy are recognizable, sometimes only by radiographic study of the chest and skeleton.

There must be a peculiar susceptibility to cancer if it is a germ disease as I firmly believe. Judging from analogy of what I know about other diseases, especially comparing syphilis and tuberculosis, their secondary growths (metastases) microscopically are of the tissues where located. In cancer they are of those of the original growth, as an example, the breast in bone, in liver, etc. This only means that the metastasis springs by permeation—lymphatic or circulatory distribution of a cancer cell or cells, which rapidly multiply and develop into a kind of hybrid imitation of the original focus, feeding on the tissues where lodgement has been made. The hereditary proclivity to cancer can never be eliminated while human beings are bred as they are and probably always will be.

The only hope there is for prevention and cure is a getting away from the view point of the pathologist, a kind of spontaneous generation resulting from irritation, and encouraging more the bacteriologist and chemist to redouble their efforts in the unraveling of this most important of all the problems involving the future of the human race, as regards its freedom from pain, and suffering, and the prolongation of the more useful times of life when human judgment is at its best.

As it now is, ninety escape cancer while ten die from it. This mortality will, I believe, be reduced; (1) not by an improved surgical attack but by an earlier one; (2) by an advance of knowledge in the use of radium of which there is evidence; (3) by a better understanding of the employment of the x-ray, which should be taken out of the hands of others than the genuine progressive expert.

I have very recently employed successfully in the University hospital, the County hospital and the Clarkson hospital, a new kind of spinal anesthesia for breast amputations and goitre operations. By this technique any operation above the diaphragm, including the head, face, and neck, can be done painlessly, as well as can all operations below the diaphragm. The lowered blood-pressure minimizes hemorrhage. Shock is blocked.

The cold knife should in every instance possible be replaced by some form of cautery or the bi-polar coagulating or cutting diathermy currents.

STUDIES IN MORPHOLOGICAL HEMATOLOGY

II. Normal and Abnormal Structures of the Human Red Corpuscle.

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As a preliminary for this second paper, it may be noted that hematology as a distinct science is of relative recent origin. Points illustrating this are the facts that the conception of monocyte as distinct from lymphocyte was first introduced by Pappenheim and Ferrata in 1910, while the modern classification of white corpuscles is in use slightly over fifty years (Ehrlich, 1875). Previous to his time very little was known, both in respect to morphology and function of blood cells.

Harvey's epoch making discovery of the circulation of the blood in 1628 completely revolutionized all previous conceptions as to the mode of tissue metabolism in the human body. When Malpighi (1661) and Leeuwenhoek (1698) demonstrated the capillary connection between arteries and veins, a point overlooked by Harvey, additional weight and significance was accredited to Harvey's discovery. Of blood components the red corpuscles were first described by Schwammderdam (1658), white corpuscles by Spallanzani (1768); in the bone marrow was first announced (1768); the fact that the mammalian red corpuscles arise from nucleated elements in the bone marrow was first announced by Neumann (1869) and Bizzozero (1868-69). Though a crude classification of white corpuscles in four distinct types was given by Schultze (1865), it was Ehrlich who through use of specific differential stains, available because of the then recently discovered anilin basic dyes, finally gave us the classification of white corpuscles into granulated and non-granulated types. The former he depicted as composed of neutrophilis with an (e), eosinophils with an (a), basophils with a (g) granulation. The latter were composed of lymphocytes and transitional cells, the term transitional being used because in Ehrlich's opinion they constituted an intergrade stage to the granulocytes, a view since proven to be erroneous.

As modernly ascertained normal adult human blood contains the following cellular components: (a) Erythrocytes in a commonly accepted proportion of five million per cm for the male, four and a half million for the female. (b) Three types of specifically granulated leucocytes, viz., neutrophils or polymorphonuclears 70-72%, eosinophils 2-4%, mast leucocytes or basophils ½ to 1%. (c) Leucocytes which may or may not contain granules (azurophil), viz. lymphocytes 18-22%, monocytes 6-9% and a varying small proportion of blood histiocytes, some of which have been interpreted as endotheliogenous elements. Additional circulatory structures are the blood platelets, present in a varying proportion of 300-350,000 per cm.

THE RED CORPUSCLE

Nucleated in the lower vertebrates (fish, turtle, frog), the circulating erythrocyte in mammals is devoid of a nucleus . . . a phenomenon occasionally met with in tailed amphibia (salamander). Lacking a nucleus, red corpuscles have a very low rate of metabolism but because of their small size, tremendous numbers and H-b content with high affinity for oxygen is nature's most perfect mechanism for a transfer of lung aveolar obtained oxygen to the various tissues of the body. The small size is adapted for maximal development of surface which Kaiserling (1922) calculates as 3,680 sq. m. for 5 liters of blood, the average amount in the body. As compared with body weight, total volume of blood approximates an average of 7%, a figure obtained with kongored injections.

SHAPE

Morphologically the red corpuscles are most probably bi-concave discs, averaging in dry smears 8 micra in diameter and 2 micra in width. With normal variations in these figures, minimal is regarded as 7.14, maximal as 8.3 in man, respectively 7.6-8.5 in woman (Henkelom, 1925). In the circulating stream size proportions are said to be larger.

The bi-concave contour is plainly visible when

Erratum: In the first paper—May Journal—the formulae for stock solutions of azur II and eosin were printed with an added % sign. The strength should be azur II, 1:1000, eosin 1:1000.—N. A. Michels.

the corpuscles are seen on edge; studied in surface view, low focus exhibits a lighter center; with high focus the lighter area shifts to a peripheral position, leaving a darker center. The phenomena have commonly been interpreted as optical effects.* The surface area of the bi-concave disc being 1.63% greater than that of spherical forms, is for Brodersen, the main reason why the bi-concave shape prevails.

Weidenreich's original contention that the red corpuscles are bell-shaped, is now interpreted as indicating that because of an inherent plasticity, erythrocytes frequently change their shape. Spherical forms measuring 5 micra in diameter are, therefore, not an infrequent find. This change in shape may be noted in circulating reds passing in single file through capillaries.

A change of shape is readily observable in various experimental media, notably hypo- and hyper-tonic salt solutions. Normally biconcave in a .9% solution, the structures, according to Brodersen (1927), become bell-shaped in a .6% solution and spherical in a 3%. If the latter treatment is followed by a .9% concentration, they become crenated. With a 1.2% concentration, mulberry-shaped structures appear, while in strong concentrations of 4%, forms with serrated outline are produced. Treated with distilled water, the biconcave elements become bell-shaped, eventually spherical.

Though functional and environmental conditions, therefore, frequently alter the shape of the red cells, any *marked and permanent deviation from the normal is symptomatic of pathological conditions and is then known either as anisocytosis, or poikilocytosis.*

ANISOCYTOSIS

It is a change in size. If dimensions are from 2-7 micra, such red cells are called *microcytes.* Their origin is perhaps due to a fragmentation of larger cells. Microcytosis is characteristic for chlorosis and hereditary hemolytic icterus. If dimensions are from 8-15 micra, the cells are termed *macrocytes,* the formative cause of which is usually a confluence of several individuals or a descent from a megaloblastic erythropoiesis. In pernicious anemia they are so numerous as to be both of diagnostic and prognostic significance for that disease.

According to Grosh and Stifel (1925) measurement of red cell diameters is of decided value in a prognostic diagnosis of Addison's disease, for in secondary anemias due to infection or hemorrhages, the degree of anisocytosis is never as pronounced as in pernicious anemia. Of characteristic frequency in chlorosis and pernicious anemia, anisocytosis may be encountered in a variety of diseases as leukemias, hemolytic icterus, secondary anemias, cancer, tuberculosis, syphilis, etc.

POIKILOCYTOSIS

It is a change in shape. Elongated, pear or racket-shaped, angular, fusiform, even extreme bizarre contoured individuals may be met with. The following theories have been propounded to explain poikilocytosis: (a) fragmentation of red cells (Ehrlich's schistocytes), (b) physico-chemical changes in the plasma (Maragliano and Castellino), (c) alterations of generic form (Ferrata), (d) a quota may be artficial products (Negreiros-Rinaldi, Weidenreich). Characteristic for pernicious anemia, poikilocytosis occurs in various leukemias, chlorosis, cancer, etc.

STRUCTURE, PERIPHERAL MEMBRANE

Opinion is still divided whether to regard the erythrocyte as a membranous vesicle with enclosed H-b, plus a few isolated specifically contoured inner structures as an innerbody, centrosome, etc. Schilling (1912-27), Gutstein and Wallbach (1927-28), or to interpret the red corpuscle as composed of a homogeneous stromatic substratum (the meshes of which contain the H-b) with no special anatomic membrane, as commonly conceeded. The distinct, broad, hoop-like membrane, noted by Meves (1904) in amphibian erythrocytes, seemingly does not occur in man, although Romieu (1922) claims this for the human red cell treated with hypertonic salt solution followed with kristall violet staining.

Evidence has accrued to show that some sort of a membrane, at least a physiological one, exists in the human erythrocyte. Long ago Weidenreich (1903) maintained a histological structure, while Schilling (1911-1912) depicted a distinct exoplasmic membranous layer in fresh erythrocytes calling it "crusta".

Recently Gutstein and Wallbach (1927-28), reopening the whole problem of erythrocyte structure, emphatically maintain that with proper fixation of dry smears as obtainable with the Susa mixture*, *a distinct, frequently double contoured (outer thin, inner thick layer), his-*

[*According to the recent extensive investigations of Gustein and Wallbach (1927-28), however, the round light area in the center of fresh erythrocytes is a distinct entity, viz., an inner-body (Innenkorper). Most probably a nuclear remain, it has an independent movement, as originally noted by Loewit, with dark field illumination. Tinctorially it may be stained in a specific counter stain as compared with the surrounding H-b. Since in size and location the inner-body corresponds to the central lighter appearing, indented area in fresh erythrocytes, the latter in their opinion can no longer be regarded as bi-concave discs, but should be looked upon as spherical structures.]

[*Susa mixture: Sublimat. 4.5, CaCl. .5, water 80, trichlor acetic 2, glacial acetic 4, formalin 20. Wash in dist. water, then diluted lugol sol. and a .25% sodium thiosulphate, each ½ hr. Wash with water Double staining.]

tological membrane may be seen with both acid and basic stains. Best results were obtained with the erythrosin-Guinea-green combination with which the erythrocyte membrane stained a blue green, the peripherally located H-b a yellow rose, the inner-body a blue green, the inner-inner body (Innenkörperchen) a very strong blue green, finally, a variously distributed single microgranulum a deep blue.

Schilling (1927) commenting on the work of Gutstein and Wallbach, states that their conception of the structure of the erythrocyte differs little from what he already propounded in 1911, viz., an outer exoplasmatic crust or membrane with a peripheral zone of H-b.; centrally, a round, glass-like, achromatic body (Glasskörper) with enclosed capsule body (Kapselkörper) and centrosome.

Does the mammalian erythrocyte actually possess this complicated architectural structure? Schilling's work was never taken seriously, Naegeli, especially, interpreting the structures as artifacts, due to partial hemolysis. Gutstein and Wallbach meet the artifact objection with the firm assertions, (1) that the structures occur in uniform fashion and frequency, (2) that with an application of two stains, one always obtains a counter staining of constituent parts. Such staining combinations being for the acid group, picric acid-Guineagreen, erythrosin-Guineagreen; for the basic group, carbol-methylene blue, methylviolet, carbol-fuchsin; (3) that the structures are readily visible in fresh and supra-vitally stained preparations.

Additional corroboratory evidence for the existence of a peripheral erythrocyte membrane are the experiments of Brodersen (1927). Placing reds in a .9% NaCl solution and subsequently treating them with a saturated aqueous solution of sublimate, he obtained a .5 micron envelope which stained clearly in iron-hematoxylin. According to Brodersen, the peripheral envelope is not a distinct entity, but is in intimate contact with the inner substance. Adding a mere .007% solution of HCl to a .3 NaCl containing erythrocytes, and retreating same with a 2% salt solution, he was able to obtain a marked recession of the inner material from the peripheral membrane.

CHEMICAL COMPOSITION

Chemically, the supposedly existing membrane is generally said to consist of lipoids, this on the basis that if shadow, i. e., hemolyzed erythrocytes, are treated with absolute alcohol, lipoids will leave. According to Görter and Grendel (1925) the lipoid (fat) substance is dispersed in a bimolecular layer. Denied by others, lecithin and cholestrin, globulin, nucleoprotein have variously been advanced as constituents of the peripheral membrane. For Gutstein (1927) the anatomic distinct membrane consist of a lecithoproteid.

From the above it is obvious that further research is needed both as to structure and composition of the human red cell. A tentative view point may be the following. Since a fragmentation (heat, mechanical injury) of erythrocytes may occur without total loss of H-b, the hypothesis seems preferable that structurally reds consists of a stromatic substratum with peripheral condensation of globular content (membrane formation), especially, since chemical analysis has demonstrated that dried erythrocytes are composed by weight of from 90-95% of H-b. According to Brinkman, Bogendorfer, Halle (1925), Jolly and others, the H-b is presumably in physico-chemical combination (adsorption) with this substratal alveolar stroma, itself an albuminoid and lipoid substance. Physiological phase membranes thusly formed are not infrequent in cell structures, and allow for permeability properties, osmotic phenomena, etc., equally well as specifically constituted and anatomically distinct structures.

VITAL GRANULES

Employing supra vital stains as mythelene blue, neutral red, cresyl-blue, Maximow (1899), Pappenheim (1899), Rosin and Bibergeil (1902-04), Weidenreich (1907), Ferrata, Jolly, Isaacs (1925), Brodersen (1926), and others have demonstrated the presence of vitally staining granules in the human erythrocyte. Brodersen maintains that in a .3% NaCl plus .05% mythelene blue solution the granules are conspicuously visible in hemolysed erythrocytes. With Maximow (1927) holding this staining process as agonal, Pappenheim (1907), Jolly (1923) and Brodersen (1926) in doubt whether the stained granules represent specific cell constituents or colored superimposed plasma derivatives (fat, Pappenheim), further research is needed in regard to the nature and specific character of these structures, which, as stated by Brodersen, occur but in a small percentage of the reds. Jolly's latest view that the granules represent either precipitates of the stain, or stained precipitates of the plasma, seems plausible, especially in the light of the established fact that *normal blood plasma contains an ingredient known as blood dust* (Blut-Staubchen), presumably a fat product, because of its quantitative increase after a fatty meal.

It is generally conceeded that these vitally staining granules have nothing to do with the reticulated substance described in the previous paper. Recently, however, Isaacs (1925) gives observations favoring an interpretation of the vital granules as signs of *physiological regeneration.* According to him .3-.7% of normal reds show a single brilliant refractive granule. Black with Wright's, it is visible in fresh preparations and stains conspicuously with cresyl blue. Since the granule cells appear before the reticulocytes or nucleated reds, they are to be looked upon as the last stage in the maturation of erythrocytes. With increase of red cells (exercise, hemorrhage) their number is increased in the peripheral circulation.

INNER-BODY

Despite its homogeneous character in fresh preparations and in those investigated with ultraviolet light (Grawitz and Gruenberg, 1906), attempts have repeatedly been made to demonstrate the existence of some specific inner-cell body in the mature human erythrocyte. Amid the earliest workers Lavdowsky (1893) maintained the existence of a nucleoid body, a theory supported for a time by Maximow (1899). Schilling (1911-1912), using a questionable technique, claims to have been able to demonstrate a central, round, non-stainable, glass-like body (Glasskörper) as a constituent of the normal erythrocyte. Previous to him Loewit had described the structure as an "inner-body" in fresh preparations. With proper fixation and a variety of staining combinations, notably that of erythrosin followed by Guineagreen, *Gutstein and Wallbach* (1928), *de novo, insist that an inner-body, most probably a nuclear remain, must be taken note of as a normal component of the mature red corpuscle.* Golgi (1920), using a gold chloride treatment, claims to have been able to demonstrate a fine fibrillar inner zone, most probably of non-nuclear origin.

With the inner-body is associated the problem of the centrosome. Metallic impregnation, according to Golgi (1920) reveals the presence of a centrosome apparatus composed of 2-3 granules with surrounding lighter area. Existence of this structure in the human erythrocyte was originally denied by Heidenhain (1894), was sustained by Schilling in 1911 and has recently been reasserted by Schilling (1927) and, apparently, by Gutstein and Wallbach (1927-28) in their depiction of a microgranulum as a normal constituent of the red corpuscle.

Since, as pointed out by Cesaris-Demel (1921), the loss of nucleus may readily explain a rarifaction of globular substance in the center as opposed to denser conditions at the periphery, the *existence of a specific inner-body and centrosome is highly improbable, and structures purporting this view are to be regarded as artifacts with incomplete hemolysis playing an important role in their formation.* (Idem Naegeli).

NUCLEAR REMAINS

Red corpuscles of some of the lower vertebrates (garter snake, salamander) often exhibit an extreme polymorphism of nuclei as a result of a repeated indentation and segmentation of nuclear material (Downey). Associated with this initial and incomplete denucleation, is the formation of numerous distinctly small chromatin blocks and granules irregularly distributed in the protoplasm. Chromatin dust particles of similar origin and nature were reported as occurring in the human erythrocyte by various workers, especially Weidenreich (1906), who claimed the structures clearly demonstrable in preparations fixed with fumes of osmic acid and stained in Giemsa.

Evidence has accrued to show that in the normal adult, erythrocytes are free from fine chromatin remains. The latter are, however, of frequent occurrence in blood of embryo and new born; pathologically, they may be seen after hemorrhages, splenectomy and in cases of severe anemias.

Morphologically distinct remnants of nucleus are, azurophil granules, Howell-Jolly bodies and Cabot ring bodies, all of which are today regarded as *specific pathological regeneration phenomena.*

AZUROPHIL GRANULES

They were first described by Naegeli as occurring in various anemias. Nuclear in origin, they, according to him, subsequently become transformed into basophilic granules. Denying this relationship with basophilic granules, Ferrata and Viglioli (1911) regarded the granules as products of an extreme form of karyorrhexis or splitting up of normoblast nuclei. *A final dissolution of these granules gives rise to a diffuse azurophil polychromatophilia not to be confounded with the ordinary polychromatophilia of cytoplasmic origin.*

HOWELL-JOLLY BODY

Discovered by Howell in 1890 in post-hemorrhagic anemia in cats, it was Jolly (1908), who, on the basis of tinctorial reactions finally succeeded in demonstrating the origin and true nature of this nuclear remain. Schmauch, with pyrodin poisoning, independently encountered the structures in severely anematized cats.

Averaging one micron in diameter, the Jolly body is a remnant of the normoblast nucleus formed by way either of a gradual dissolution of the entire nucleus or partial dissolution of multiple nuclear buds. Prevailingly single, the structure may accordingly occur in ratios of 2-3. Central or excentric in position, the body, though varying in size, is always spherical. Frequent in blood of embryos and new born, the structures are relatively sparse in adult bone marrow, but *become exceedingly numerous in severe blood diseases as pernicious anemia, leukemia, severe secondary anemia, malaria, splenomegalia.* In cases of the latter, for some unknown reason, removal of spleen causes a pronounced increase of Jolly bodies. Hirschfeld (1918) is of the opinion that the spleen influences denucleation in the bone marrow through a hormone; with removal of the spleen this ceases, hence the increase (Naegeli).*

CABOT RING BODY

First observed by Cabot (1903) in cases of lead intoxication, the structure has subsequently been encountered in various severe anemias, notably pernicious anemia. With Giemsa it stains a red violet. Prevailingly ring-shaped and peripheral in position, the structure is occasionally double, one ring overlapping the other. At times its form is very peculiar, viz., that of a figure 8 or a double 8, that of a raket or twisted rubber binder. It may occur in orthochromatic or polychromatic red cells, as well as in those having basophilic stippling. (Ferrata, Pappenheim). According to Brodersen (1915) nucleated erythrocytes in bone marrow of emaciated winter frogs exhibit multiple contoured structures, simulating Cabot ring bodies, either free or in juxtaposition to the nucleus.

Despite Brodersen's observations in frogs, Romieu's (1922) identification of the body with the striated border membrane of the erythrocyte pathologically detached from the periphery of the cell, Cesaris-Demel's (1921) interpretation of the structure as the limit of colorability between an inner zone with less dense H-b and a peripheral zone more compact in nature, modern hemotologists are prevailingly in favor of regarding the structure as nuclear in origin (Ferrata, Jolly, Sabrazes). *The Cabot ring body represents a homogeneous, occasionally a fine granular, remnant of the nuclear membrane, retained after a complete dissolution of the major mass of the nuclear material.* Patterns varying from the ring type are effected either through a subsequent change in form, or to a vacuolization of previously irregularly contoured nuclei. According to v. Juspa's (1914) figures, the vacuolization process begins in the center of the nucleus, extends progressively towards the periphery, where it ends with a distinctly outlined ring formation of remaining nuclear material.

HEINZ-EHRLICH BODY

Injections of various blood poisons as pyrodin, sodium-nitrate, nitro-benzol, pyrogallic acid, nile-blue sulphate, etc., causes the appearance of peculiar cytoplasmic structures, known as Heinz-Ehrlich bodies, in a varying proportion of the red cells. Heinz (1890) originally observed the bodies in experimental blood poisoning, produced in rabbits with pyrodin injections. Later, he encountered them in *pathological human blood.* Because of their staining reaction in unfixed smears treated with physiological salt solution and mythel-violet, he termed them "Blaukörper", or blue bodies. Central or peripheral in position, the large round bodies were always distinctly delimited from the rest of the protoplasm, a reason which prompted Heinz to interpret the structures as a protoplasmic necrobiotic phenomenon of the red cells.

Ehrlich, evaluating the significance of Heinz bodies, interpreted them not as protoplasmic degeneration phenomena, but as due to a degenerative alteration of H-b, presumably into meta-H-b. Morphologically, they were similar to the internal, markedly acidophilic eosinophilic bodies (hemoglobinamische Innenkörper) described by him in severe anemias, a view subsequently taken by Friedstein (1911).

According to Schilling-Torgau (1912), the eosinophilic bodies are not artifacts, but *represent preformed structures* identical with his "Glasskörper" (glass-like body), observed by him as a normal constituent in some of the red cells. Ordinarily difficult to demonstrate, the structures come to view clearly with the altered physico-chemical conditions existent in pathological blood.

In his first papers Pappenheim also insisted on a preformation of the structures, explaining their origin as a residual oxychromatin of the erythroblasts (degeneration phenomenon). Later (1919) he adopted the view of Ehrlich.

The micro-chemical studies of Hartwich (1912) showed that Heinz bodies were soluble in acetic acid and gave an oxydase reaction; those of Kunkel (1913) demonstrated their lipoid con-

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[*The distinct round chromatin particles simulating Jolly bodies, obtained by Castronuova (1916), Negreiros-Rinaldi, Ferrata and others in the nucleated erythrocytes of various mammals and in the permanently nucleated red cells of the lower vertebrates, are not arguments against a chromidial origin of all Jolly bodies, nor evidence for a nuclear secretory origin of some of the structures (Ferrata), but are to be interpreted as instances of partial riddance of chromatin material, frequently met with in the lower vertebrates.]

stitution with small amount of iron but no H-b. Naegeli (1919) regarded the bodies as protrusions of red cell protoplasm, demonstrable with vital staining.

Recently, Gustein and Wallbach (1928), using a mixture of two poisons (toluylendiamin 1%, pyrodin, 1%), obtained a generalized Heinz body formation in the blood of rabbits and mice the second day after injection. Since subcutaneous injections of nileblue sulphate alone produced the Heinz bodies *without an accompanying metahemoglobinemia, the structures, in their opinion, have no relationship with H-b or its degeneration products.* Due to a high phosphid content, Heinz bodies have a strong affinity for basic dyes (carbol-methylene blue, methyl-violet, carbol-fuchsin). They are stainable with acid dyes as picric-Guineagreen, also supravitally with methyl-violet, nile-blue, victoria-blue. Authors favor the opinion that genetically they most probably represent an altered inner-body with a distinctly outlined deeply staining membrane.

In concluding this topic it may be stated that while usually central or excentric in position, Heinz bodies are frequently met with as extruded structures. Because of their rotundity and small size, they may then erroneously be mistaken for blood platelets.

A SYMPOSIUM ON THE RECENT EPIDEMIC OF RESPIRATORY INFECTION GIVEN AT THE STAFF CLINIC OF THE UNIVERSITY OF NEBRASKA HOSPITAL

Clinical Manifestations - - - - G. P. Pratt, M. D.
Findings in Children - - - - Clyde Moore, M. D.
Post-Mortem Findings - - - J. A. Weinberg, M. D.
Epidemiology of Influenza - - J. Jay Keegan, M. D.

CLINICAL MANIFESTATIONS

G. P. PRATT, M. D.

The clinical manifestations of influenza are well known to all of you. I will simply review the symptoms which seem of most interest to me at this time.

Influenza is an infection the cause of which we do not know. A good many observers in this country think it is produced by a streptococcus or a pneumococcus. The French school say it is a filterable virus. The German bacteriologists think that the influenza bacillus is the causative organism. Anyway, it is an infection of the respiratory tract and the clinical manifestations are: Febrile reaction of a severe nature and symptoms due to a localizing infection of the nose, pharynx, larynx, trachea and bronchi with a special tendency to bronchopneumonia.

I have seen these cases in three clinical varieties, or perhaps one should speak rather of three modes of onset. There is the influenza with an abrupt onset; an onset associated with coryza and, lastly, an intermittent type of influenza.

In the first variety the patient is stricken suddenly, literally drops in his tracks, with a temperature—101½° to 102°, and occasionally even higher, with headache, pain in the back, joints and extremities, nausea, sometimes vomiting and extreme prostration. This type starts acutely and, if not complicated, recovers the same way, in 48 to 72 hours. It is the most severe infection of the three and does more harm to an individual's protoplasm perhaps than either of the other two types.

The second mode of onset begins with a full-blown coryza and then spreads rapidly to the rest of the tract. This type of infection is very apt to terminate with a chronic sinusitis.

The third, or intermittent type, is the hardest to handle because the infection is more chronic and it is with greater difficulty that these patients are able to completely recover. This type of case will have no fever on the first day and complains of feeling somewhat "grippy". The second day the temperature is elevated and associated with it are all the characteristic clinical symptoms. On the third day and fourth day the patient perhaps is afebrile, but on the fifth and sixth day there is again a rise in temperature with more severe clinical manifestations. The patient then recovers somewhat to have a recurrence maybe again on the eighth or tenth day. There was, with each flare-up of temperature, symptoms due to a localizing of infection in some previously uninfected part of the respiratory tract.

I have some charts of the epidemic we have in this hospital, showing the intermittent variety, or cases starting as coryza and terminating in a sinus infection and of the cases with the sudden onset.

DEMONSTRATION OF CHARTS

The study of the temperature charts of these patients is interesting because it is my impression that with a fever lasting into the fourth day or past the fourth day we are undoubtedly dealing, if not with a bronchopneumonia, at least with a capillary bronchitis. Areas of bronchopneumonia are more common than the physical findings would lead one to believe. X-ray examinations of the chest will bear me out in this statement.

In the epidemic during the World War we spoke of the seventh day of fever as the "dead line". One did not talk so much of the physical findings of these patients as of the length of time they were febrile. If fever continued past the seventh day, there was practically a 100% mortality due to bronchopneumonia. In this present epidemic, I am of the opinion that if the temperature persists into the fourth day the chest certainly deserves special investigation and a thorough effort to find areas of bronchopneumonic consolidation will probably be rewarded.

The throat condition is also of interest. I have a picture here which shows a typical influenza throat. The posterior pharynx and the anterior and posterior pillars are injected to a deep scarlet. The injection extends up from the uvula onto the soft palate where it stops abruptly at the junction with the hard palate. This sharp line of demarcation between the hard and soft palate is characteristic. Further, the affection of the soft palate is blotchy, resembling a measly rash and has been spoken of as an enanthem. This picture which I will pass around was taken in 1919. It is somewhat faded but I believe if you hold it to the light, you can see what is meant by the influenza throat. A careful examination for this typical throat picture is important, and in this epidemic I found it present in about half of the cases. The patients who had the influenza throat were quite sick and had a prostration which persisted for days. The cases without this type of throat are able to throw off the infection more quickly. I am inclined to put a question mark after the diagnosis of influenza unless I find this characteristic throat phenomenon.

The complications in this epidemic are important. Sinus infections are common, especially following the second type of onset. Laryngitis, with a loss of voice and persistent cough, is found in a good many cases. Myositis, particularly of the lumbar muscles, occurred in a few instances, and, of course, the prostration which follows is very common and troublesome, and in people who are not up to par it may persist for several weeks.

The epidemic we have here is very mild and has only a slight mortality. There have been a few cases of severe, persistent bronchopneumonia. I have seen these bronchopneumonias in two types, one, due to the streptococcus with a low leucocyte count, and resembling in all details the bronchopneumonias seen during the World war, and the second type due to the pneumococcus. The findings in this latter class have been more widespread, and the lesion has taken on a pseudo-pneumonic form. The leucocytic reaction is the typical leucocyte count of infection due to the pneumococcus, ranging from 20 to 30 thousand white cells. We have typed these patients and have found in almost every instance either type 2 or type 4. In my own experience there has not been a single case of type 1. Further, the pathology of these lobular pneumonias is an accumulation of a small amount of fluid in the pleural cavity. So far it has not been necessary to drain these cases, as the fluid has decreased day by day, until it has been absorbed.

FINDINGS IN CHILDREN

CLYDE MOORE, M. D.

The epidemic has had quite a definite clinical course in children. The onset was usually very sudden, with high fever, lassitude and occasionally slight symptoms of pharyngitis. The temperature range was between 102° and 105°. Within 24 to 48 hours the temperature came down to normal in many of the cases but in others there would be a gradual decline to normal by the third day.

A very characteristic feature was the sudden elevation of temperature upon the 4th or 5th day. This was so constant that during the latter part of the epidemic I told the mothers that the child's temperature would be down on the second or third day and would come up on the fourth or fifth day. The course of the temperature after this secondary rise was dependent upon the complications.

The "flu" throat, which Dr. Pratt mentioned, was quite characteristic. The pharynx was congested, the pharyngeal lymphatics were enlarged, and there was quite a sharp line of demarcation of the inflammatory area on the soft palate. The posterior cervical glands were enlarged in the majority of cases. Not all of the throats showed this characteristic picture. In some there was simply an inflammatory reaction in the pharynx.

The clinical symptoms varied a great deal. Vomiting was quite a constant symptom at the onset. A number of the cases developed a moderately severe acid intoxication with very marked drowsiness. A severe cough occurred in the early stages. This would be very frequent, dry and, at times, distressing. After 12 to 24 hours it would change to a loose, productive type of cough. There were no other characteristic symptoms, the various other symptoms noted being those due to complications.

On account of the rush of the epidemic we had no opportunity to do any laboratory work.

The complications in children were practically confined to the ears, trachea and larynx. The cases of otitis media were much milder than last year. A few had to have a paracentesis but we only had two mastoids out of a very large number of cases seen.

Trachetis and laryngitis were common. Two cases were seen in which intubation was necessay. Repeated cultures in these cases were negative for *B. Diphtheriae*.

Pneumonia occurred in three cases. One of these which ended fatally, was a septic pneumonia. Another developed a lung abscess and later recovered.

POST-MORTEM FINDINGS

J. A. WEINBERG, M. D.

I take up the pathology of the respiratory tract as we saw it in cases in the University hospital. I do not know whether we may properly term it a manifestation of influenza. To all appearances we should. I hesitate because while we have had a number of cases of pneumonia recently these have not shown definite symptoms of influenza before the occurrence of pneumonia. Also, in most instances there has been other pathology present. The patients developed pneumonia while in the hospital because of some debilitating disease. In these instances the pneumonia has been a terminal affair. The striking thing, however, is that the lungs showed typical changes much the same as those found in lungs in the epidemic during the war period.

The cases which came to autopsy showing pneumonia were admitted with the following diagnosis: Pernicious anemia, two heart cases, pansinusitis which later developed meningitis, and one with chronic bronchiectasis . Of this group of cases there is one which should not be related to the epidemic—a frank lobar pneumonia case in the stage of gray hepatization.

I can best give you a picture of the pathology in the cases of lobular pneumonia by showing you one of the lung specimens. In this specimen you will note first a thick fibrinous exudate on the surface of the lung over the areas of pneumonia. This particular case shows a very extensive involvement including almost an entire lobe. Most of them have not shown such extensive involvement much as is seen in a pneumonia complicating measles. You will note that the lung shows hemorrhage in some areas, intense congestion in others, and the presence of areas resembling decomposed raw meat. Most of the lungs have shown widely separated patches of pneumonia with advanced congestion in the rest of the lung tissue. The congestion was so marked that if one did not realize that pneumonia was prevalent, or one did not see the occasional patches of exudate on the pleura, the pathology might easily have been overlooked on gross examination. The bronchial tubes have a peculiar appearance—a greenish-gray exudate rather adherent and extending to the smaller branches.

The findings in other organs consisted chiefly in inflammation of the terminal part of the ileum, an active congestion. The parenchymatous tissues in the liver and kidneys showed the usual early degenerative changes.

Dr. Pratt raised the question of lung abscesses. There have been no large abscesses which could be considered a part of the pneumonia process. There were two or three lungs which showed small abscesses one to two millimeters in diameter. There were two cases which showed abscesses but these were explained in other ways: One was a metastatic affair in which there were abscesses in the brain, lung and kidney; the other case was one of chronic bronchiectasis in which the abscesses were of long standing. We can easily see how the small abscesses in the pneumonia cases could go on to formation of large abscesses by coalescence. Someone has asked about the pathology in the trachea. The pathology in the trachea was the same as that in the larger bronchi, a greenish-gray exudate with congestion. There was no evidence of marked swelling.

EPIDEMIOLOGY OF INFLUENZA

J. JAY KEEGAN, M. D.

It is rather difficult to discuss the epidemiology of influenza because there still is so much unknown about the disease. Like religion, if a few premises are accepted, the arguments can be made much more convincing. Since my remarks will be based upon certain premises or fundamental conceptions of influenza, I shall state these before beginning my discussion.

1. The toxic symptoms of influenza are not diagnostic.

2. The most constant and important diagnostic sign is evidence of localization in the lower respiratory tract.

3. Influenza should be considered an epidemic of lower respiratory infection, or a pneumonitis.

4. The symptoms and course indicate a primary bacterial infection.

Epidemic diseases are forced upon the public's attention by the suddent onset, prostrating toxemia and rapid spread. The same disease in milder form usually goes unrecognized. This is particularly true of the pre-epidemic stage of respiratory diseases where the common cold is so frequently prevalent and thought so little of. In discussing the epidemiology of influenza it always, impresses me that everyone ignores this pre-epidemic stage which is most important in a correct interpretation of the disease. An epidemic disease does not arrive fully developed, except by transmission from one country to another. It must have a developmental origin somewhere. That place usually is shrouded in mystery and most safely can be blamed upon some distant country, as China or India. The present epidemic was first blamed upon California, but California promptly blamed it upon Japan, across the Pacific Ocean. This simply is passing the buck or failing to recognize the development of epidemics in this country.

I have defined influenza as an epidemic pneumonitis. If this is true, its pre-epidemic manifestation would most likely be the ordinary bronchial cold or acute bronchitis. The war time epidemic influenza quite evidently developed in the camps in Europe and the literature of the preceding winter contained numerous articles on the prevailing influenza bacillus bronchitis and later p. u. o. (pyrexia of unknown origin), which might well be interpreted as the transition to the epidemic stage of influenza. The real epidemic stage began when it spread to the civilian population of Spain, and later United States, in the fall of 1918. The severity of this pandemic was due to the fact it arrived in this country in a well advanced epidemic stage and had an ideal environment for rapid spread and increase in virulence. Practically the entire population was susceptible from not having had previous contact with the pre-epidemic stage, and enormous numbers of troops were centered in military camps throughout the country. The disease thus became an epidemic of pneumonia.

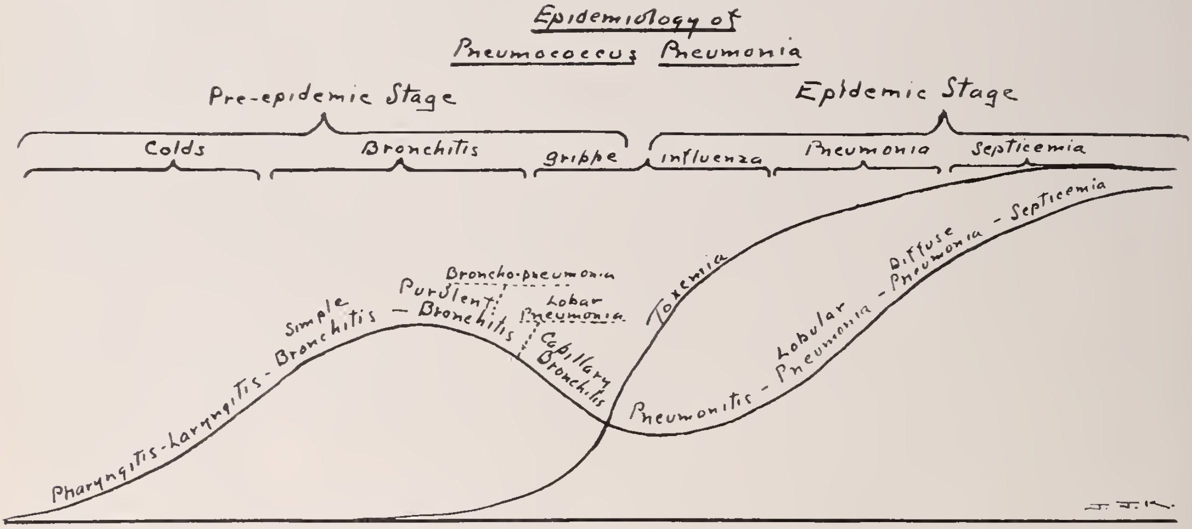
Ordinary influenza, which appears practically every winter, does not reach the pneumonia stage except in a few cases where lowered resistance is particularly favorable. The chief reason it does not reach this level is because it has developed through the pre-epidemic stage in the same environment. When it reaches the epidemic stage it quickly runs through the remaining susceptibles, in most communities at about the same time. Consequently it runs a shorter course and soon disappears from lack of further susceptible individuals.

The present epidemic of influenza is the ordinary epidemic of pneumonitis which occurs every winter, perhaps a little more widespread and noticeable this winter because of its early start before other respiratory infections complicated the situation. The question has frequently been asked, is this real influenza? It is not, if one has the war time epidemic in mind, but it is similar in pulmonary localization and primary pathology. Its etiology is not known and surmises only can be made. However, I believe there are some facts worth considering. Accepting the probability that influenza is bacterial in origin, there are only three bacteria which are very clearly associated with primary lower respiratory infection. By far the commonest is the pneumococcus. Next is the hemolytic streptococcus, particularly of the war time epidemic of streptococcus pneumonia and empyema in this country. And third, the influenza bacillus is very frequently found in acute bronchial infections. Perhaps the influenza bacillus should be placed ahead of the hemolytic streptococcus, except for the war time epidemic of streptococcus pneumonia. The hemolytic streptococcus has a greater tendency to localize in the tonsils and pharynx, where it produces the epidemic diseases of streptococcus sore throat and scarlet fever. It is more often a terminal or distinctly secondary invader in the bronchi and lungs.

The diagnostic features of most acute bacterial diseases are first, the localizing signs or pathology, and, second, specific systemic reactions as in the exanthemata. Influenza has no recognized specific systemic reaction, hence interpretation of the disease must be based upon its localization and pathology. The war time epidemic of influenza had described a specific gross and microscopic lesion in the lungs, although both might be questioned. The gross appearance of the lungs could not be differentiated if a history of influenza or an influenza epidemic were not known. The miscroscopic lesion described by Goodpasture and by Wolbach as specific was a peculiar hyalin membrane within the alveolar ducts, which appeared to obstruct aeration of the lungs. This was not always found, but when present was almost diagnostic of the war time influenza pneumonia.

The pathology of the present epidemic of influenza has not been of this type, although the rather diffuse hemorrhagic type of gross pathology has sometimes been seen. Clinically and microscopically there has been a great predominance of the pneumococcus type of pneumonia. This is characterized by a dense leucocytic and fibrinous exudate in the alveoli; and the frequent finding of fixed types of pneumococci by culture. I am aware that these may be considered secondary complications of the primary disease influenza. Still I believe the complications of many diseases are of significance in the etiology: as the streptococcus complications of scarlet fever. From the evidence at hand I would guess that this epidemic of influenza was caused by the pneumococcus and would offer the opinion that our annual epidemic of mild influenza is caused by the pneumococcus, the commonest lower respiratory infector.

I have indicated that an epidemic of influenza should be viewed in a broad manner with pre-epidemic and epidemic periods, and varying pathology and symptoms during these periods. I believe I can best represent my conception of this sequence of events by a graph which shows curves of pathology and toxemia.



This graph is divided into two major periods, the pre-epidemic and the epidemic. A third, or post-epidemic, might be added. Progression occurs through secondary divisions, each representing a few weeks in time, commonly recognized as colds, acute bronchitis, the grippe, influenza, pneumonia and finally sepsis, or blood stream invasion. The post-epidemic curve follows somewhat the same order reversed.

To me the most significant pre-epidemic manifestation is the stage of purulent bronchitis, a type of acute bronchitis in which abundant purulent exudate is coughed up and in which there is a distinct tendency to chronicity and peribronchial infiltration; but little toxemia. Whenever this condition is prevalent, particularly among children, we should recognize that an epidemic of the grippe or influenza is imminent among the adults who have not gotten this milder or pre-epidemic infection. Also I would like to express the opinion that the bacterial etiology of this bronchitis, which can easily be ascertained, is quite indicative of the etiology of the later epidemic. The war time epidemic of streptococcus pneumonia was preceded by a prevelant hemolytic streptococcus purulent bronchitis complicating measles and there was a very definite influenza bacillus purulent bronchitis in France and England preceding the war time epidemic of influenza.

In the present epidemic of influenza I would like to call attention to the prevalence of pneumococcus purulent bronchitis during October and November, before anyone thought of influenza. I know of several cases from personal experience. Every member of my family of four had a low grade smouldering bronchitis, beginning with the two children, as far back as September. I contracted my infection about the middle of October and it was definitely a primary lower respiratory infection, which ascended to the trachea, larynx, and pharynx in succeeding weeks. I had a pharyngeal culture taken and a predominant mucoid type III pneumococcus was found, which formed capsules on ordinary serous media. Finally, about November 20th, I developed a chill with temperature, leucocytosis and a small area of pneumonia in the right base, with pleurisy. This temperature lasted only three days, although a productive cough persisted another month. The bronchial sputum both during and after the pneumonia showed the same Type III pneumococcus.

I cite this personal experience because it illustrates not only a most characteristic pre-epidemic purulent bronchitis, but also indicates the origin of this epidemic of influenza. Many others of this territory and climate were having the same experience in varying severity. My opinion would be that it was transplanted from here to California where the climate and remoteness had protected them from the pre-epidemic stage; and that the epidemic then got its start on a large group of susceptible individuals, and started back across the United States in true epidemic style. Those who had recently had the bronchitis were immune but the others were not, and consequently readily got the more virulent infection.

The second period, which I wish to emphasize in the graph, is the grippe period when the evidence of pathology makes a peculiar drop, as the toxemia rapidly increases. This is the transition stage between the pre-epidemic and epidemic periods, and is most difficult to diagnose or localize. The same disappearance of local pathology occurs at this stage of other epidemic diseases. My interpretation of it is that it represents a brief infection and rapid recovery which occurs when a bacterium has gained enough virulence to penetrate the bronchial epithelium or to get in the alveoli, but not enough to withstand the prompt systemic immunity reaction which its penetration stirs up. The bacteria disappear promptly almost without demonstrable pathology. I have seen this stage of streptococcus sore throat where only a sensation of dryness was experienced and the throat was only slightly injected for a day or two. Yet, cultures before onset were negative for the hemolytic streptococcus and on the next day after onset were strongly positive. The difficulty of diagnosis of this stage in lower respiratory infection is increased by the inaccessibility of the region, and the transient nature of the lesion, which clears up without physical signs or sputum. A diagnosis of capillary bronchitis may be made by a careful clinician.

Most epidemics of the ordinary grippe end at this stage for all susceptible individuals are soon infected and the epidemic dies out. Occasionally, however, as this year, circumstances are favorable for further transmission and increase of virulence. Then we call it influenza, which usually means a rather widespread primary pneumonitis which may clear up quickly, but may go on to lobular or diffuse pneumonia in those with lessened resistence, as in the aged and infants, or secondary complications may develop, often depending upon other prevailing infections. Fortunately, in the present epidemic, there have been few secondary complications, perhaps due to the early seasonal occurrence of the epidemic and particularly to the absence of a virulent strain of the hemolytic streptococcus.

UNDULANT OR MALTA FEVER

JOHN BUIS, M. D.,
Pender, Nebr.

Undulant or Malta fever is characterized by a long continued irregular fever, accompanied by rigors and excessive sweating, feeling of exhaustion, headache, leucopenia, mononucleosis, and enlarged spleen.

To causes of long continued fever, as typhoid, tuberculosis, sepsis, malaria, and trichinosis must be added *Brucella melitensis* infection, variety abortus. Especially is this true in rural districts as by far the largest percentage of cases have been reported among farmers and inhabitants of small towns.

That the disease has been overlooked is shown by its history. The first case to be recognized in the United States was in 1924 in Baltimore. Since that time less than 200 cases have been reported in the literature, the greatest number from Iowa in the past year when Hardy reported 125 cases. One case has been reported in Nebraska according to the records of the Department of Public Welfare. This case was reported in *The Nebraska State Medical Journal* for May, 1928.

Case. D. C., age 29, farmer. Married. One child. Called at the office July 3d, 1928, at ten a. m. His chief complaint was chills and fever at night. The second, weakness; exhausted all the time. The third, constipation. Had to take salts every other day to secure evacuation of the bowels.

He had not felt well for several months, being troubled with night sweats. The last two weeks he had been more tired than usual and was hardly able to do his farm work. He did not cough. There was no history of having coughed up or spat up blood. No sputum. He had lost lost ten pounds in weight. The past week had a severe headache most of the time and the last three days bleeding from the nose. There was shortness of breath on walking or any undue exertion. His appetite was good. Slept good except for annoyance of sweats at night.

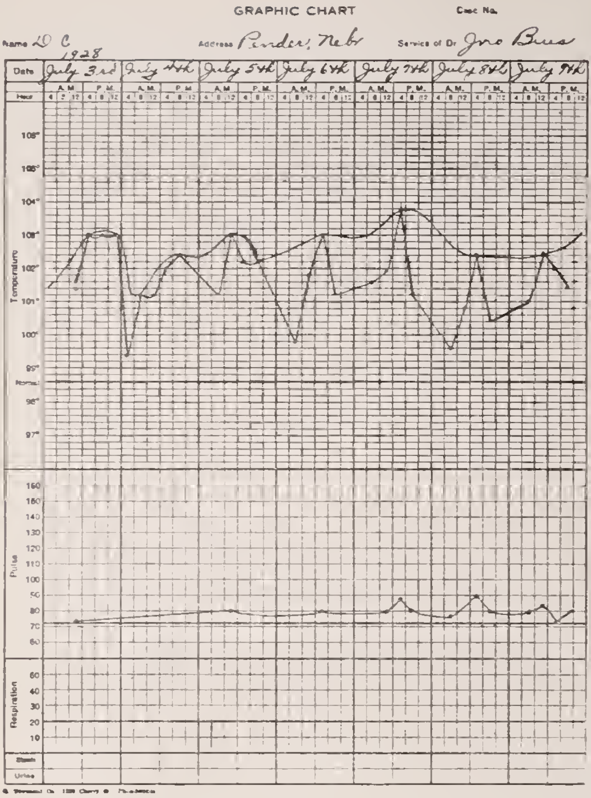
Examination: Temperature 99.6, pulse 70, respiration 18.

Chest: There were no rales or modified breath sounds, no variations from the normal in vocal fremitus or whispered voice sounds, no dullness on percussion.

Abdomen: No tenderness, no distension.

Extremities: No areas of tenderness or pain.

Pupil, patellar, plantar and scrotal reflexes were



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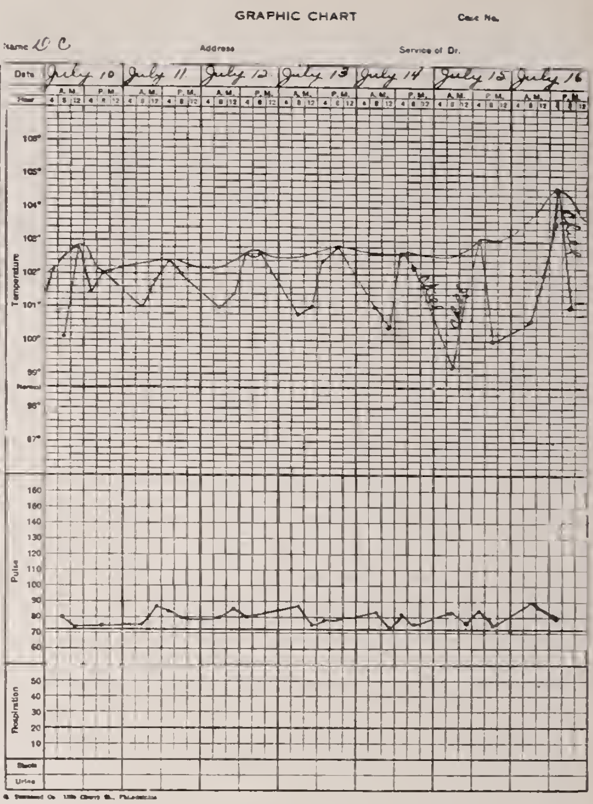

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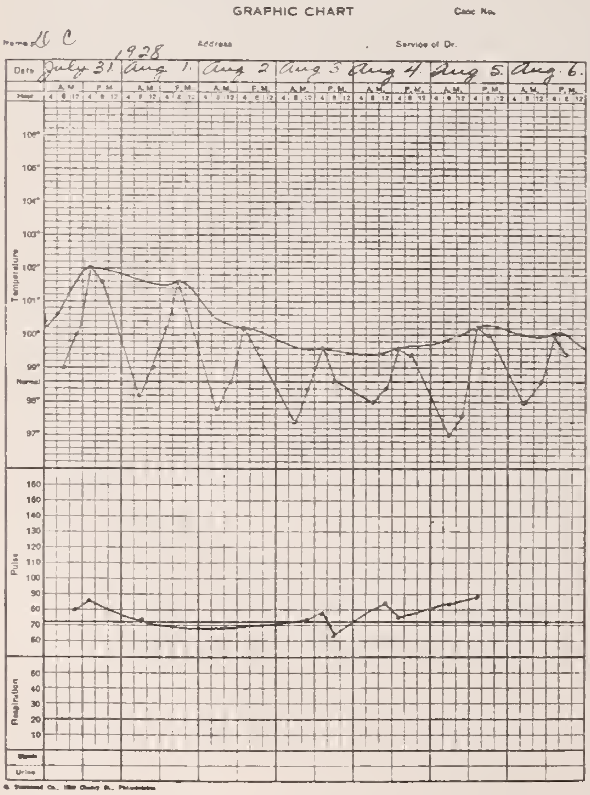
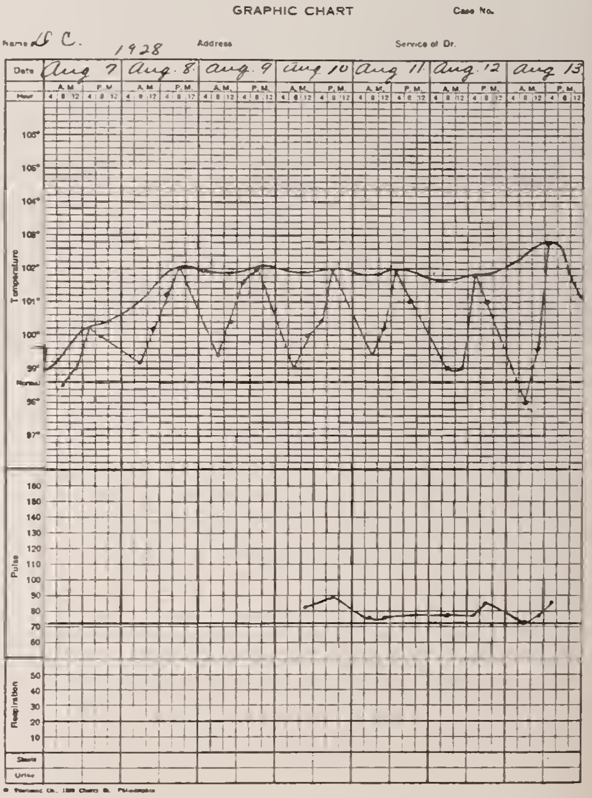
1-2. The first division of the high temperature plane begins July 3d and extends to July 16th.



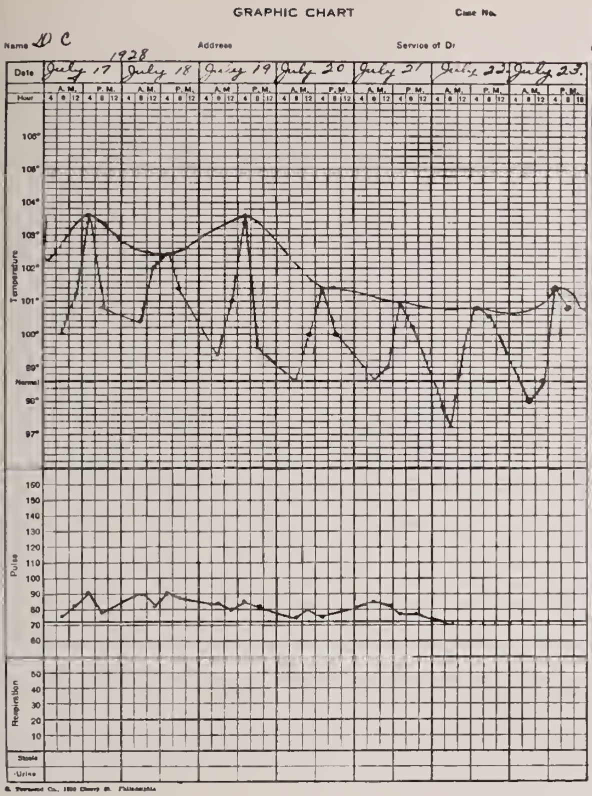
5

5. A depression begins August 1 and is continuous till August 7.



6

6. A new high plane begins August 8 and is continuous till August 20.



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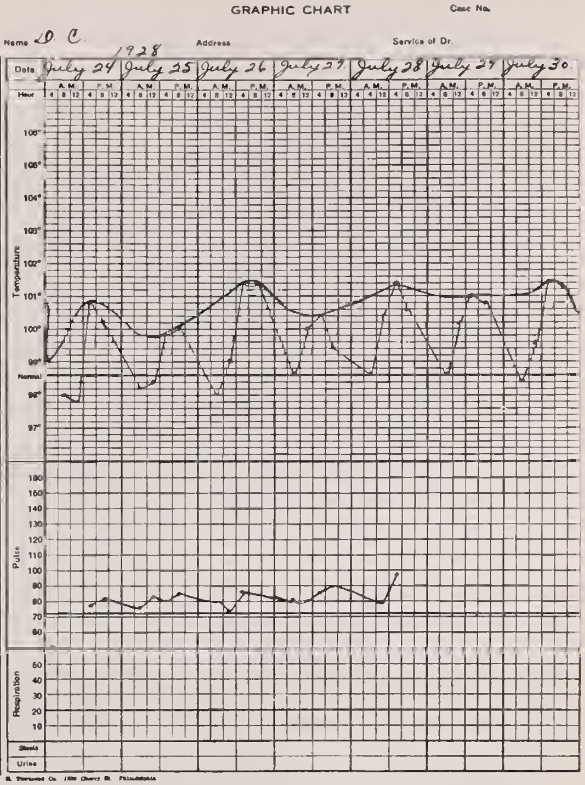

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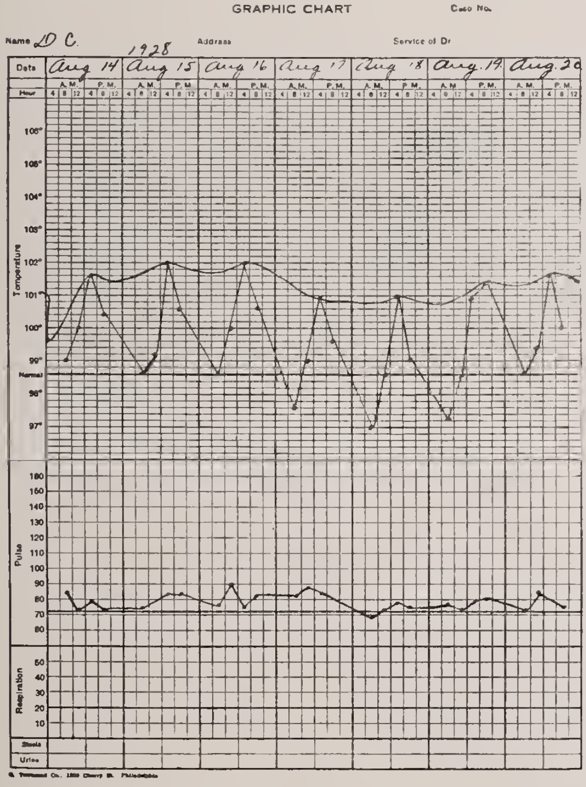
3-4. A new plane begins the 17th and is maintained till July 31st. This is at a slightly lower level than the first plane.



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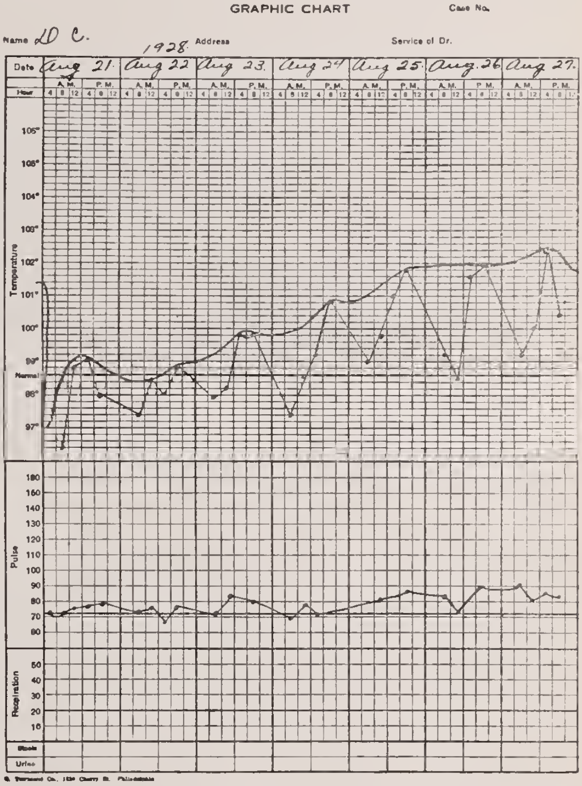

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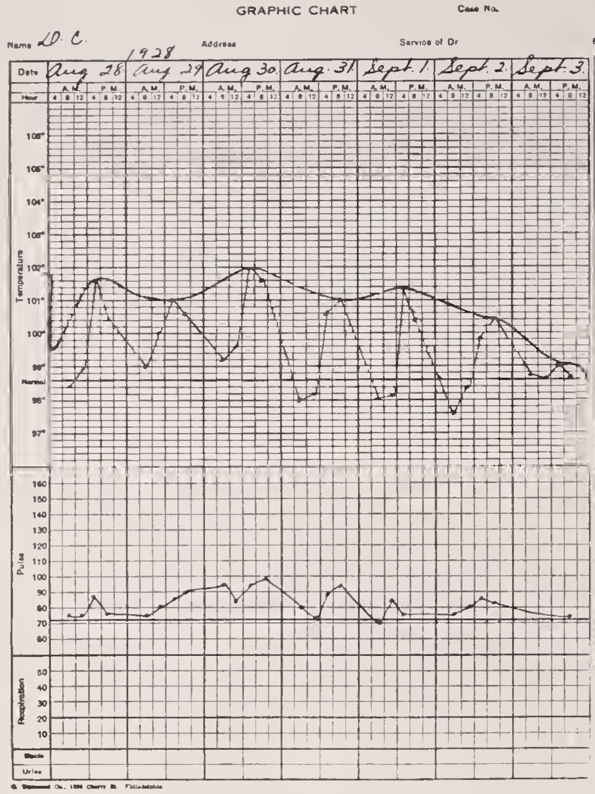
7-8. A short depression extending over 21st, 22nd and 23d. A new plane begins the 24th with its highest peak on the 27th. The decline is slightly irregular but is continuous for six days.


GRAPHIC CHART
Case No.
Name D. C.
1928
Address
Service of Dr
Date
Aug 28
Aug 29
Aug 30.
Aug. 31
Sept. 1.
Sept. 2.
Sept. 3.
A.M.
P.M.
Hour
Temperature
106°
105°
104°
103°
102°
101°
100°
99°
Normal
98°
97°
Pulse
160
150
140
130
120
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Respiration
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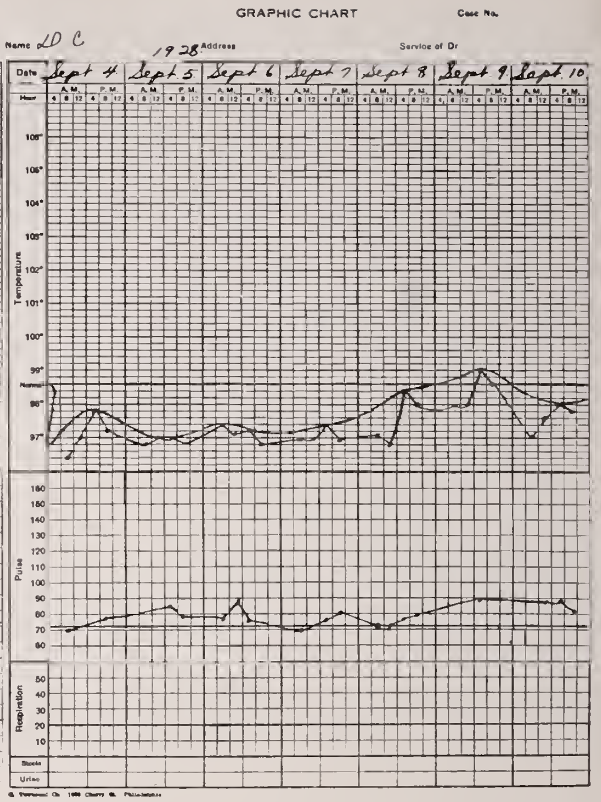
Stools
Urine

9


GRAPHIC CHART
Case No.
Name D. C
1928
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Date
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Sept 8
Sept 9
Sept. 10
A.M.
P.M.
Hour
Temperature
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104°
103°
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101°
100°
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Normal
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Pulse
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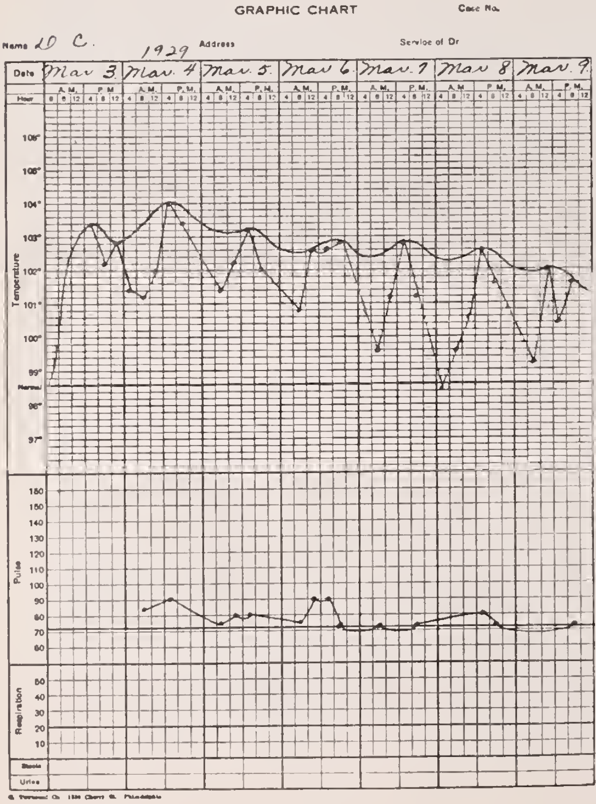
Stools
Urine

10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Case No.
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Service of Dr
Date
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Mar. 4
Mar. 5.
Mar 6.
Mar. 7
Mar 8
Mar. 9.
A.M.
P.M.
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106°
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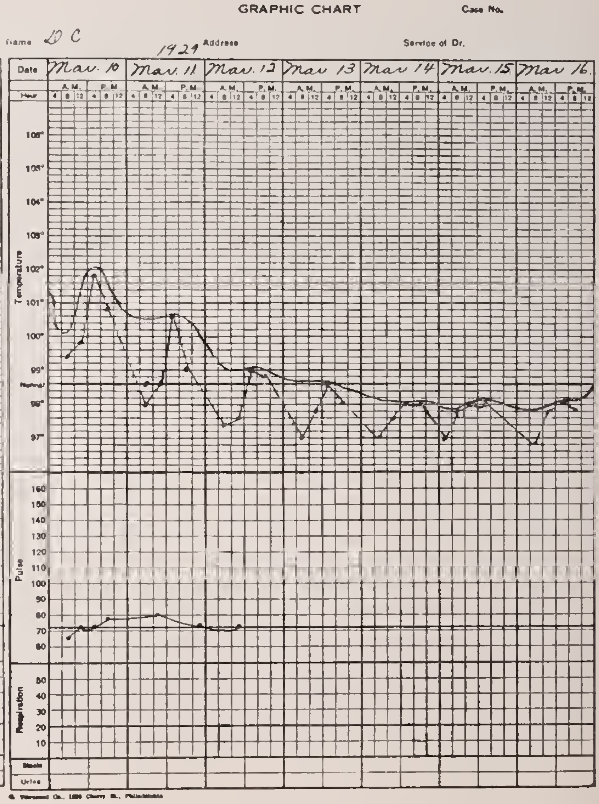
13


GRAPHIC CHART
Case No.
Name D. C
1929
Address
Service of Dr.
Date
Mar. 10
Mar. 11
Mar. 12
Mar 13
Mar 14
Mar. 15
Mar 16.
A.M.
P.M.
Hour
Temperature
106°
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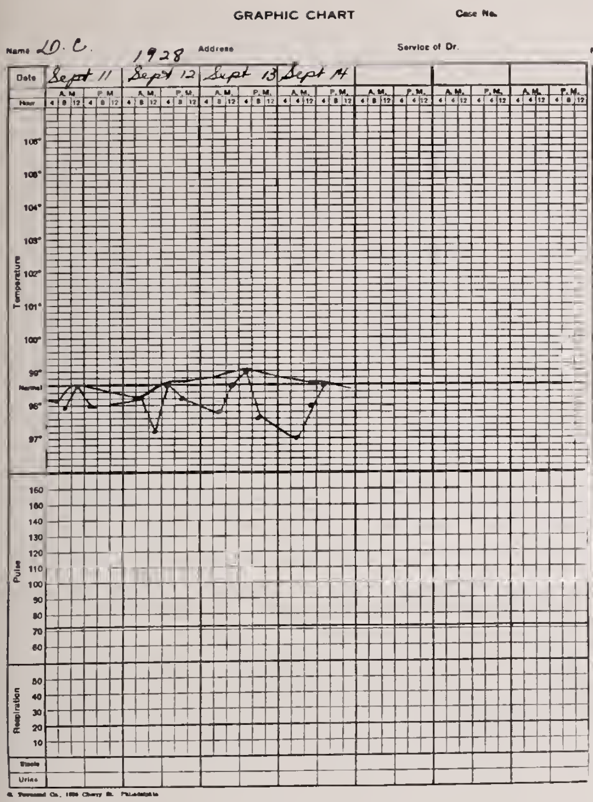

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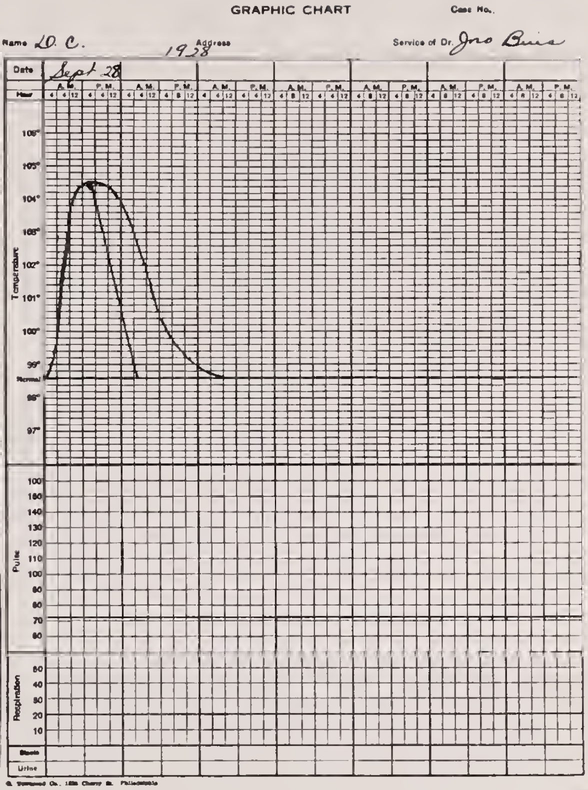

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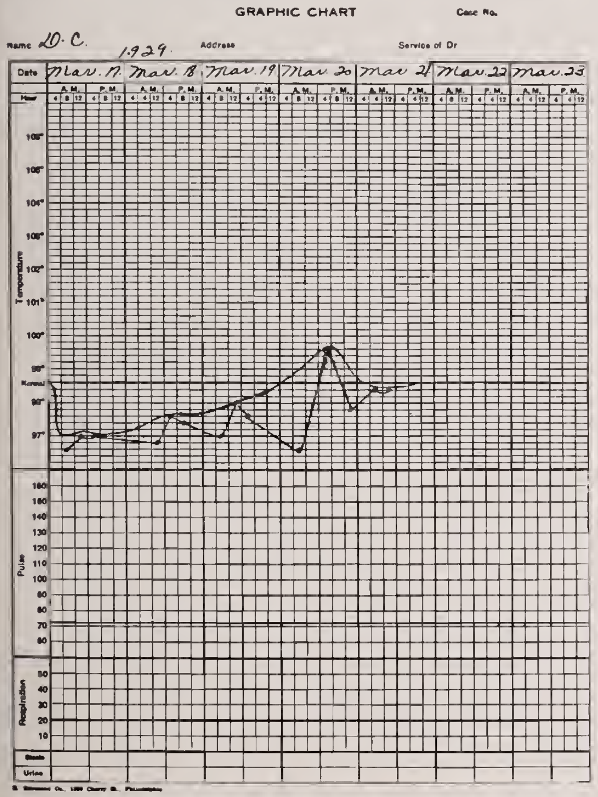
12. The elevations on Sept. 28th are partly diagramatic. On the whole the chart illustrates the typical unduiant course of the fever.



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normal. The urine was negative, no albumen, sugar, pus or casts were found. The white cell count was 5,000, differential not made.

He was advised to go to bed as his clinical picture was suspicious of typhoid.

At 8 p. m. his temperature was 103.6, his pulse 70.

July 4th, 6:30 p. m., his temperature was 102, pulse 80, respiration 18. He was out of bed as his backache was so severe he could not lie down, and sitting seemed to give him some relief.

July 5th. The abdomen was distended. Had several watery stools.

July 6th. Complained of feeling sick all over. Was given ¼ cc of typhoid and para typhoid vaccine.

July 7th. Rigor and sweats. The abdomen was markedly distended so that he was very uncomfortable. This was relieved by an enema.

July 11th. No distension. Spleen enlarged. Tongue coated with red margin. Apathetic. Loosing weight. Chills and fever.

July 14th. Rigors and sweats but feels comfortable.

July 16th. No delirium although temperature reaches 104.6, pulse runs about normal, 70 to 80. Suspicious rose spots on abdomen.

July 19th. Temperature runs slightly higher than last week. Spleen large.

July 22. Temperature has not gone above 101 last three days. Morning temperature has come down to 97.2, lowest it has been since going to bed.

Aug. 2nd. Pain in back, tender in both flanks, temperature goes to 102.

Aug. 9th. Feels fine. Much better than week ago.

Aug. 12th. Temperature maintains about same level.

No ascertainable cause can be found for temperature. No albumen, no pus or blood in urine.

Aug. 16th. Small pieces of blood clots in stools. White cell count 7,000. Red blood cells 4,800,000. Heart sounds seem weak. Sweat worse than usual last night.

Aug. 19th. Temperature again declining.

Sept. 3d. Temperature rises steadily every evening to 102. Has cold clammy sweat every night. Sweating on lower extremities when seen. Large drops of prespiration from hips down. Heart sounds weak. Marked **tache cerebrale** over abdomen. Feels fine and would not know he was sick if temperature were not taken regularly. Was given 1/30 gr. strychnia every four hours. Liberal diet was ordered as patient had been trying to starve the fever. The temperature immediatly dropped to normal and remained so for week when he was allowed out of bed.

Sept. 20th. He again called at the office. Rather weak but feeling fine. No weight loss.

Sept. 28th. Had fever last night but did not take temperature. That morning tried to do some work. Had chill at 10 a. m. and again at 1 p. m. When seen at 3 p. m. temperature was 104.4, pulse 120, respiration 24. Complains of pain through chest. There is no localized pain. No increase of pain on deep inspiration. No rales. Temperature was normal again in three days.

From this time on he attempted to do his farm work. Beginning with January he had considerable trouble with "rheumatism". Was in bed at times and thinks he had some fever at times but did not take his temperature.

March 3d. Has been in bed most of past week. Had chill today followed by temperature of 103.4, pulse 110, respiration 24. Has sputum tinged with blood. Looks cyanotic. Annoying cought. Headache.

March 4th. Temperature 104, pulse 96, respiration 28. Does not cough much. Cyanosis not marked. Pain in eye balls and back of head. Light burns eyes. Cannot sleep for some reason. Has few fine rales in chest.

March 7th. Cough has disappeared. No expectoration. No dullness in chest.

March 8th. Had several bloody stools during night. Pain in abdomen. Chest negative. White cell count 5,000.

March 21st. Called at office. Temperature 98.6, pulse 70. Chief complaint is weakness and sweating at night. "Rheumatism" has disappeared. Diminished voice sounds left chest posteriorly. No sputum. White cell count 6,000, reds 5,000,000, weight 159 lbs.

Five cc of blood was sent to the U. S. Public Health Service laboratory at Iowa City, with a request that it be tested for Brucella melitensis infection.

March 6th we received the following: "As you suspected, we find agglutination for Brucella melitensis. There is complete agglutination in serum dilutions of 1-20 to 1-640 but not higher. If, as you indicate, the patient is now convalescent it is quite possible and it seems probable that the titer was higher than this at an earlier date. I am taking the liberty of sending a copy of this report to your State Department of Health. A. V. Hardy, Acting Head State Hygenic Laboratories."

April 1st a specimen of blood was sent to the state laboratory at Lincoln and one to a private laboratory at Omaha. Both reports were, "No agglutination for Brucella melitensis or Malta fever."

In developing the further history of the case it was learned that in 1925 he had sold four of his milk cows out of a herd of five because they aborted at the fifth and sixth month. He has this cow at the present time but she aborted about two months ago at the third month of gestation.

In 1928 he sold eight of his cows out of a herd of thirty because of sterility. In contracting the infection it must have been by contact with his stock as he never drank milk.

The treatment of the disease at the present time is entirely supportive. In the reports of cases that have been published mercurochrome intravenous, acriflavine and milk intra-muscularly have been used.

The mortality in cases reported is about four per cent. The most serious feature is the long period of invalidism. Some cases running into years before there is relief. Immunity evidently does not exist as the agglutination disappears in a short time, in some cases. This would exclude the possibility of developing a serum or vaccine against the infection.

PRESIDENT THAYER ON THE INFLUENCE OF THE INDIVIDUAL PHYSICIAN

"What, after all, does a man who has practiced medicine for a good many years feel to be the greatest service that he renders? I am sure that most men who have practiced general medicine feel that it is the influence, prophylactic and general, that he excercises in his close human relations with men and women. The good that I do I am sure comes largely out of the time that I spend personally with the individual. It is hard work and takes a good deal of time, but I am sure that I have done more good by such personal effort than by anything else.

"I do not believe that this influence of the individual physician can ever be supplanted. There will always be puzzling questions to meet. The nature of the physician's practice is sure to change in some respects, but I doubt very much whether we need annoy ourselves in the abstract about the sphere of the individual practitioner of medicine. So long as we are human beings, so long the human influence of the physician will continue to be of vital importance.

"It is highly probable in the future we shall need to learn to cooperate in more ways than we have in the past, and better than we have, in order to protect and help the public. But despite this, nothing that I can see is likely to diminish the importance or the value of close human relations between physician and patient."

MULTIPLE PRIMARY MALIGNANCIES—CLINICO-PATHOLOGICAL REPORT OF CASE WITH INDEPENDENT PRIMARY CARCINOMATA OF BREAST AND STOMACH*

B. M. RILEY, M. D., B. CARL RUSSUM, M. D., AND M. WILLIAM BARRY, M. D.

In 1921 Owen(1) reviewed 3000 cases of malignancy in the literature since 1910, and found multiple growths in 4.7 per cent of the cases. Ninety-eight per cent of the multiple growths were epitheliomas, five of which were associated with carcinoma of the breast. Gade(2) reviewed 4219 cases of malignancy in Norway and found 0.76 per cent of multiple tumors. Pearl-Bacon(3) at Johns Hopkins found only one instance of multiple malignancies in 816 cases of malignancy coming to autopsy. This one instance was an epithelioma of the esophagus with hypernephroma of the left kidney in a white male. They ruled out two other cases where more careful study revealed supposedly multiple primary growths to be metastases from a single primary tumor.

Independent primary carcinoma of the stomach and of the breast in the same patient is an extremely rare subdivision in this rare group of multiple malignancies. We have encountered only one such case in the last 898 autopsies.

CASE REPORT

A white female, 66 years of age, was admitted to St. Joseph's Hospital, June 3, 1926, on the service of Dr. B. M. Riley. She complained of weakness, headache, dizziness and diarrhea for an indefinite period, but she was practically moribund and no authentic history could be obtained from the patient or the friend who brought her to the hospital. She had been told recently by a physician that she had pernicious anemia.

On physical examination she appeared well nourished. There were chronic varicose ulcers over both shins. The blood hemoglobin was 30%, the red blood count 4,290,000, the white count 3,450, and the blood Wassermann negative.

She became weaker, involuntary, somewhat jaundiced, dying on June 9, 1926, six days after admission.

Anatomic diagnosis: (B. C. R.) Marked secondary anemia, with hyperplasia of bone marrow; atrophy cf gastric mucosa; carcinoma of left breast with metastases to left axilla; old healed gastric ulcer; marked arteriosclerosis; left lateral scoliosis; arteriosclerotic kidneys; fibrous adhesions between transverse colon and stomach; chronic perisplenitis; calcification of splenic capsule; multiple cysts of endometrium and over each tube; senile atrophy of uterus and ovaries; atrophy of cortex of brain; some atherosclerosis of vessels at base of brain.

Autopsy: Section through the left breast revealed a hard nodule about two cm. in diameter which on section was opaque and gray, and rather uniformly firm. In the fat of the left axilla was a smaller nodule about one cm. in diameter, which on section was firm, gray, opaque, rather granular, and ovoid. About five cm. from the cardiac end of the stomach, on the lesser curvature, there was a one cm. scar, apparently an old healed ulcer.

In paraffin sections of the left breast nodule, stained with hematoxylin and eosin there are masses and strands of hypertrophic, hyperchromatic, epithelial cells growing in a dense fibrous stroma. In sections through the gastric ulcer there is marked glandular hyperplasia with hyperchromatism of the lining cells, while the submucous, muscular and peritoneal coats are invaded by hyperchromatic cells arranged in glandular formation. In similar sections taken from the stomach wall one inch distally there is an extensive infiltration of the submucosa, and to a lesser extent of the muscle and subserosa, with small glands lined with similar hyperchromatic epithelia which in several places seem continuous with the glands of the mucosa; in the latter are large glandular elements lined by hyperchromatic epithelia.

We interpret the breast tumor as a polygonal cell carcinoma of the scirrhous type with typical metastases to axillary lymph nodes, while the findings in the stomach are those of an early adeno-carcinoma with no regional metastases. Microscopical findings in the other tissues were: Conglomerate tubercles in peribronchial lymph nodes; chronic varicose ulcer of the leg; serous cysts of surface of Fallopian tubes; hyperkeratosis of skin over left breast; metastatic polygonal cell carcinoma of left axillary lymph node; senile atrophy of right breast; arteriolar disease of kidneys; hyaline perisplenitis; brown atrophy of liver; senile atrophy with fat replacement of pancreas; erosion of soft palate from artificial teeth; fatty infiltration and degeneration of myocardium; small rectal polyp; chronic inguinal lymphadenitis (right); atherosclerosis of aorta, slight.

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*From Departments of Medicine and Pathology, Creighton University School of Medicine.

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ROSTER OF OFFICERS

Dr. B. R. McGrath, Grand Island, President	1929
Dr. Frank S. Owen, Omaha, President-Elect	1930
Dr. E. L. Brush, Norfolk, Vice President	1929
Dr. W. R. Boyer, Pawnee City, Vice President	1929
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Dr. C. P. Fordyce, Falls City	1930
Dr. A. E. Cook, Randolph	1930
Dr. Morris Nielsen, Blair	1931
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Dr. Frank Tornholm, Wahoo, Chairman	1931
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DELEGATES TO A. M. A.

Dr. A. D. Dunn, Omaha	1929
Dr. R. W. Fouts, Omaha	1930

DELEGATE, COUNCIL ON MEDICAL EDUCATION, A. M. A.

Dr. J. S. Welch, Lincoln	1929

MEDICO-LEGAL DEFENSE COMMITTEE

Dr. Roy W. Fouts, Omaha, Chairman	1929
Dr. C. A. Hull, Omaha	1930
Dr. R. B. Adams, Lincoln, Secretary	1930

Note: In case of suit notify secretary at once.

THE OMAHA MEETING

Renewed interest in organized medicine is well illustrated in the attendance at the annual meeting held at Omaha, May 14, 15, 16, which totaled 450 registrants—the largest number ever attending an annual meeting. It is further demonstrated by the fact that 100% of those on the program did their parts. Still further is it demonstrated by the attendance and rapt attention at all the sessions. The meeting place—the Elks Club—was a happy choice for it took the doctors away from the catacoustics of hotel ball rooms, mezzanines and lobbies to a place secluded and restful where it was possible to concentrate attention to the work in hand.

An innovation at this meeting was the induction with appropriate ceremonies of Dr. F. S. Owen as president, which added eclat to the occasion.

Dr. Gerald B. Webb, Colorado Springs, guest of honor, discussed "Early Diagnosis of Pulmonary Tuberculosis", stressing the statement that the x-ray is the best single diagnostic for early tuberculosis. Dr. Carl A. Hedblom, Chicago, spoke on the "Etiology and Surgical Treatment of Pulmonary Abscess." He stressed the fact that no one treatment is preferred, but that cases must be individualized. Dr. A. V. Hardy of the United States Public Health Service brought to our attention the unsuspected prevalence of Undulant fever. Since we know now that the contagious abortion of cattle is produced by the same germ as undulant fever, it must be true that we have many unsuspected cases of undulant fever in this state, derived from milk and butter of affected cows. If, as suggested, our state laboratory is not equipped to discover the germ in material sent to the laboratory for examination, then it is high time that those in charge rise to the occasion. Incidentally, the case report of undulant fever published in this number will help to orient us on this disease. Dr. John R. Caulk of St. Louis, demonstrated his "Cautery Punch Operation for the Relief of Obstructions at the Bladder Neck." He clearly showed that there is a place for this operation in selected cases. Dr. Charles A. Elliott, Chicago, spoke on the "Diagnosis and Treatment of Hyperthyroidism." Dr. Elliott is convinced that the wise use of iodin is useful, but does not cure—the disease progresses. Iodin is beneficient in all forms of hyperthyroidism and should be continued after operation to prevent hyperplasia. The "Address on Surgery" was given by Dr. W. J. Arrasmith of Grand Island and stressed the laboratory findings in diagnosis. Dr. C. P. Fordyce, Falls City, gave the

"Address in Medicine". Dr. Fordyce's oration was a thorough exposition of the problem of monoxide poisoning. The President's Address was given at the banquet attended by over four hundred guests. He ably discussed specialism and the general practitioner whom he visualizes as not disappearing but as just coming into his own, better equipped to take his part in the field of preventive and curative medicine.

Dr. K .S. J. Hohlen of Lincoln was elected president-elect, a reward well earned by service on the campaign committee of the association for a number of years. The next meeting will be held at Lincoln.

It is to be regretted that petty politics will deprive us of the service in the House of Delegates of the American Medical Association of the only Nebraska representative who has compelled recognition in the councils of that body in a third of a century; on the other hand the eruption gives us another delegate whose compelling personality will be certain to bring recognition in the councils of that body.

It is thought by many that the meeting just closed was the best rounded out annual meeting in the long history of the association.

The Nebraska State Medical Association is growing in numbers and in scientific importance as the meeting just closed amply proves.

Public Health Week was observed in Omaha by cooperation of the Public Activities committee of the State Association with local committees in Omaha. During the week addresses were given at twenty-five different places. Much credit is due Dr. E. R. Hays, Chairman Public Activities committee, for his far sighted policy.

"A SURVEY OF THE PHYSICIAN'S INCOME"

Medical Economics publishes the result of a survey made to determine the average of the physician's income. Three thousand questionnaires were sent out and approximately one thousand answers were received. The questionnaires were sent to:

"(1) rural communities, having only one or two physicians; (2) towns of about 5,000 population; (3) cities of about 10,000 to 25,000 population; (4) cities of 50,000 population and more; and (5) metropolitan centers, like New York, Chicago and Philadelphia.

"The important questions were: (1) How many years have you been in practice? (2) What was your approximate gross income during the past year? (3) What was your approximate net income during the past year? (4) What is the number in your family? (5) Is your office in your home? (6) Do you own your own home? (7) How much of your income are you able to save for investment? (8) In what form are most of your investments? (9) On whose recommendations do you invest your surplus funds? (10) Are you a general practitioner or a specialist?"

"The results of the survey are quite interesting and somewhat different from what we have been led to believe.

"We see, for instance, that the average net income for physicians over the entire United States is apparently $5,806. (Previous estimates have placed the average lower). We see that this figure rises from $3,284 in rural communities, to $7,125 for metropolitan centers. In industrial cities (mills, mining, etc.) the average net income is $6,235, slightly more than the $4,800 for towns of about 5,000 population, and less than either the medium-size city or large city incomes of $6,369 and $7,022, respectively.

Deducting the figures for net income from those for gross income gives us, obviously, the approximate expense of practice. Here the city of large size holds a lead over the metropolitan center, as in the former the expense of practice appears to be $4,357, and in the latter it is $4,102. For the rest, this figure seems logically graduated.

"It is interesting to notice that the difference in expense of practice between physicians whose offices are in their homes and those whose offices are not is only a little more than $200.

"The question on savings gives us some of the most interesting and helpful data. Apparently the most ideal location from the standpoint of income saved for investment, is in the town and city of medium-size. Rural practitioners save on the average of $1,257 yearly; those in the next type of community $1,549; and then there is a jump to $2,706 for the place of about 10,000 to 25,000 population. Saved income drops to $2,639 for the city of 50,000 or over, and to $2,203 for the metropolitan center. Physicians in industrial sections save only $1,468. The average for the country is $1,970.

"Subtracting savings from net income gives us a figure which we may assume to be living expenses. This average rises consistently: $2,027 for country doctors to $4,922 for physicians in metropolitan centers. The general average is $3,835."

THE NEBRASKA PUBLIC HEALTH ASSOCIATION MEETING

The Nebraska Public Health Association held its spring meeting April 15, in the Lincoln Hotel, Lincoln, as per schedule with a moderate attendance—and a few new members garnered in.

The program, as published, was carried out in its entirety, the first paper was "Interest in Public Health" by Dr. M. F. Arnholt, superintendent of health for the city of Lincoln. The paper stressed the need and activities of the local health department, pointed out how a helpful program may be carried out by education and publicity. The author discussed the great help of clinical talks and reports to the laity through the use of hand bills, posters, lectures, exhibits and especially the newspapers, during epidemics. Newspapers are a tremendous source of help if rightly used, he said, and should be used more by health departments. He declared that to create interest in public health matters is of prime importance to any community.

"Nutrition in Children" was discussed by Miss Evelyn Blackburn, nutritional nurse to the Lincoln city schools. She declared that thinness of malnourished children is not due to heredity, but is due entirely to improper food, faulty food habits and insufficient food. Practically one child in every three is physically defective, but since nutritional classes have been formed through the country there is less and less likeli-

Dr. B. F. Lorance, Auburn, county health officer for Nemaha county, handled the subject, "Health Examinations in Public Schools". He expressed it to be his opinion that the School Inspection law is one of the most worth while health laws on our statute. The doctor maintained that teachers in the public schools can and do make worth while inspection of the school children as the law provides and requires. He pointed out the importance and value of the county superintendent assembling the teachers just before the opening of the school year and having the physician explain and elucidate the methods of inspection and urging the importance of the examinations being made exactingly.

The theme, "The Mental Hygiene of College Students", was presented by Miss Eleanora Stromquist, Kearney. She gave as opening statement that, "College failures and students driven to suicide by the emotional upheavals of school life have given rise to modern mental hygiene service."

A certain amount of emotional upset is bound to come in the college years and, in spite of our efforts, will continue to occur. Until our knowledge of human nature increases, we cannot hope to eliminate from our colleges "difficult personalities" she said.

Another thought given: There has been in the past a great deal of material turned out of our colleges without knowledge as to what the world was all about. One crying need of our educational system is for real research in vocational guidance.

"Dental Hygiene" was discussed in an instructive paper by L. T. Hunt, D. D. S., of Lincoln. Dr. Hunt pointed out and stressed the need of teeth inspection in the public schools asserting that it should be kept up to the highest possible standard.

Miss Alice Marshell, secretary of the Nebraska State Tuberculosis Association closed the day's program with an interesting talk on the work her association is doing, the number of cases in the state, the work being done, the financial needs of the association, etc.

The papers were full of interest as was manifested by the generous discussion elicited.

—W. H. Wilson, Lincoln.

GENERAL PRACTITIONER IN MEDICAL SCHEME

M. L. Harris, Chicago (*Journal A. M. A.*, Dec. 1, 1928), traces the decline of the family physician and attributes the cases to various factors. The health examination of school children weaned many mothers away from the family physician. Health officers and boards of health, overstepping their legitimate field of operation, began to treat certain individuals and to furnish advice, and in some instances remedies, free to those whose economic status did not entitle them to free treatment. This again took a certain number of people away from their family physicians. Following this came the infant welfare society. This act was abused by many well-to-do mothers who imposed on the generosity of the medical profession, which was giving its service ostensibly to the poor; this also estranged them from their family physicians. A few years ago, workmen's compensation acts were passed by the legislatures of the various states. These laws again took a great deal of work away from the family physician. These workmen's compensation acts brought into being a number of insurance companies organized for the purpose of insuring the industries against loss by reason of injuries to the employees. Many of these insurance companies, in order to save money, employed young physicians with little experience in handling industrial injuries to look after their cases, often paying them a small and inadequate compensation, the companies seemingly not realizing that the most expenivse service they can have is cheap surgery, on account of the frequent bad results which many of the injured suffer from incompetent treatment. These injured employees are deprived of the privilege of having their family physician in on the case, should they so desire, except at their own expense, owing to the rule of doubtful legality promulgated by the insurance company that they must have the physician designated by it. A few years ago, some of the life insurance companies began urging their policyholders to have a periodic health examination with the idea that it would increase their longevity. Soon after this, commercial institutions organized for profit appeared on the scene for the purpose of making these periodic examinations. As a result of their altruistic sophistry, many misguided physicians throughout the country were induced to lend their services for the purpose of making these examinations. In this instance, the physician has been induced to sell his brains and skill to a jobber for $5, who immediately resells it to the consumer for $25. This is merely another way in which the confidence of the people in the family physician is undermined. If there is any one who should make these examinations, it is certainly the family physician who is thoroughly acquainted with the patient and his environment. These are things that have had their origin with the people and have had a tendency to wean them away from the family physician. However, it may be said that some of them at least have been encouraged by the profession. There is an overproduction of specialists. Medical students today seem to be imbued with the idea that the science of medicine is so extensive that no person can hope to compass the whole subject, and, therefore, each one should try to limit himself to some particular branch. This idea has been instilled into the minds of the students by the present method of teaching in our medical schools. As a result of this teaching, the student becomes convinced early in his college career that, since it is not possible for him to become proficient in the entire subject of medicine, he must be a specialist in some branch long before he has completed his fundamental medical education. The custom that prevails in most medical school of permitting students to take so many hours of elective studies Harris believes is bad, as it stimulates the desire to specialize. Again, too much time is spent in the various laboratories and in experimental work until the student is led to think that disease is to be located in a test tube instead of in a living human being. It is a mistake to permit students to spend too much time in original experimental or research work. Many communities are sadly lacking in good general practitioners; the number of specialists in some of them is as high as 30 per cent of the total and many of the remainder would like to devote themselves to a specialty if their practice would permit it. This is perhaps largely the fault of the people, who seem to be obsessed with the idea that there must be a specialist for every human ill. As a result, specialists began to multiply in order to satisfy this popular craze. What the people need more than anything else is more general practitioners, men with a thorough knowledge of general medicine, men who may become intimately acquainted with the lives and habits of their patients and who may be able to care for the great majority of their ailments, since it is only a minority of these that require the attention of a specialist. The medical profession has come in for many opprobrious remarks on account of the charges made for services. That some of the charges may have been exorbitant there can be no question, but that such has been the rule must be denied. Nor is the profession entirely to blame if the fees have been raised in certain cases. The people have gotten away, as has been shown, from the custom of consulting their family physician in ordinary illnesses. They seem to have developed the idea that there must be a specialist for every ill, and that they must have as many physicians or specialists as they may imagine that they have diseases. Of course, the people expect to pay the specialist more, and if he doesn't charge more it is thought that he cannot be much of a specialist and they are dissatisfied. Here is a sort of vicious circle: the people look for specialization; the medical schools turn out more specialists; specialists, being poorly versed in general medical knowlodge, become narrow minded and see nothing but their particular subject in the patient, overlooking the fact that a human being is not simply a group of disconnected functions but harmonious combination of many interrelated functions. Physicians work more hours in the twenty-four than any other class, yet they are constantly being called on to give more of their time to altruistic work. Any physician, to keep abreast of the progress that is being made, must be an eternal student. No eight-hour work days are his; the candle frequently burns at both ends. To be a good practitioner takes not only most of the physician's time but also much of his money, since new books, periodicals, paraphernalia, and time spent visiting institutions of learning in order to improve one's knowledge are expensive. People should not expect to obtain good things for nothing. It is frequently said that rural districts in many instances are without good physicians and often without any at all, and this by some is attributed to the scarcity of medical practitioners. This, however, is not true since there are plenty of physicians in the country. The reason rural districts are often without good medical service is that the community will not make it an object for a physician to locate and remain there. The rural district may have any kind of a physician it wants, a good one or a poor one according to what it is willing to pay for. How are we to regain the complete confidence of the people, which now seem to be on the wane? How are we to counteract the pernicious influence of the hundreds of lay organizations created for the purpose of bringing to the great masses the kind of medical services that they are in need of and at a cost within their means? Harris believes that this can be done only by an organization for the business of distributing a high class of medical care to all who are in need of it. Every county society should organize as a business institution with headquarters properly equipped for handling all kinds of ambulatory cases. This should be a community medical center and provision should be made also for the care of all those who need hospitalization or bed treatment. The service should be arranged for by the institution itself, each physician contributing a certain amount of his time and skill to the work. It is to be understood that this is not to be a charitable institution where service may be had free. Public charges should be paid for at reasonable rates by the county. Services to all others should be paid for at rates within their means as determined by their economic status. Those who are able to pay the regular rates of physicians should have their own, as at present. Such an institution should not only be self-sustaining but should be able to pay reasonable compensation to the physicians who are doing the work. Such an institution should be of great advantage, financially and otherwise, to the profession. It should keep the control of the care of the sick within the confines of the profession and not allow it to drift into the hands of foundations and lay organizations.

Insanity is said to be decreasing. Maybe it's because so many things that used to be considered crazy aren't any more.—Arkansas Gazette.

NEBRASKA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

The sixteenth annual meeting and banquet of the Nebraska Academy of Ophthalmology and Otolaryngology was held Monday night, May 13th, at the University Club, Omaha.

Seventy members and guests were in attendance.

A symposium was presented on Mastoid Infection and Intracranial Complications, from the standpoint of the

Pediatrician—Dr. J. Clyde Moore, Omaha.
Aurist—Dr. J. J. Hompes, Lincoln.
Oculist—Dr. J. M. Patton, Omaha.
Neurologist—Dr. G. A. Young, Omaha.

The following officers were elected to serve the coming year:

Dr. E. B. Brooks, Lincoln, president.
Dr. A. E. Gadbois, Norfolk, vice president.
Dr. Clarence Rubendall, Omaha, secretary-treasurer.

RATES TO THE PORTLAND MEETING

The American Medical Association annual meeting at Portland, Oregon, July 7-12, will attract a great many mid-western physicians to the Pacific northwest coast. Those desiring to go should bear in mind that round trip rates of one and one-half fare will be in effect for the meeting. Members will purchase tickets to Portland, taking receipt for the same, which receipt, on presentation to the Secretary of the A. M. A., at Exhibit Hall, Portland, will be countersigned and will entitle owner to purchase return ticket for half price.

THE COURSE IN OBSTETRICS AND PEDIATRICS AT THE UNIVERSITY

The post-graduate course in obstetrics and pediatrics, given at the University College of Medicine during the week preceding the annual meeting of the Nebraska State Medical Association, was an epoch making event. Attended by thirty members of the profession—to which number the course was limited—who are unanimous in their praise of the work given, it is sure to be the beginning of regular annual post-graduate work in Omaha.

A special effort was put forth to make the course given as thorough as time would permit and the social welfare of the visiting doctors was considered in that the medical library was kept open evenings, privileges of two golf clubs were tendered them, special group clinics were given and the members were guests at dinners given by the Methodist Hospital staff, the Nebraska-Iowa Pediatric society, and a dinner at the Country Club given by the Obstetric staff of the University Hospital.

Resolutions and list of the physicians attending follow:

We, the undersigned committee, representing the 1929 Post-graduate Class of the University of Nebraska College of Medicine, desire to extend our thanks to the Dean and Faculty of the University for the very efficient course offered and given during week May 6th to 13th, 1929.

We furthermore wish to thank the Staff of Methodist Hospital, Members of the Iowa-Nebraska Pediatric Society, Members of the Nebraska Obstetrical Society, the Omaha Country Club and Happy Hollow Club for their kind hospitality and entertainment.

It was the unanimous opinion of the class that similar courses, in the various branches of medicine, should be given at stated intervals as may seem feasible to the Staff and Faculty.

F. B. Cyphers, M. D., Chairman,
Arthur W. Anderson, M. D.,
Carl W. Sherfey, M. D.

DOCTORS TAKING THE POST-GRADUATE COURSE

Dr. Arthur W. Anderson, Lexington.
Dr. W. S. Bartholomew, Lebanon.
Dr. F. B. Cyphers, Duncan.
Dr. A. B. Fellers, Palisade.
Dr. R. A. Frary, Stanton.
Dr. G. H. Gilmore, Murray.
Dr. E. B. Hanna, York.
Dr. Leo D. Harman, Pawnee City.
Dr. Chas. Harms, Lincoln.
Dr. R. E. Harry, York.
Dr. Walter C. Harvey, Gering.
Dr. J. P. Jensen, Plainview.
Dr. F. L. Krampert, Imperial.
Dr. P. B. Lonergan, Bloomfield.
Dr. O. H. Magaret, Papillion.
Dr. George H. Morris, Newman Grove.
Dr. William N. Nelson, Hardy.
Dr. W. R. Neumaker, Columbus.
Dr. A. M. Pedersen, Avoca, Iowa.
Dr. J. F. Premer, Benkelman.
Dr. J. Y. Racines, Palmer.
Dr. Chas. H. Root, Bassett.
Dr. Henry H. Seely, Harvard.
Dr. Charlotte P. Seiver, Fremont.
Dr. C. W. Sherfey, Lincoln.
Dr. J. W. Stockman, Red Cloud.
Dr. W. R. Strickland, Omaha.
Dr. G. A. Young, Norfolk.
Dr. A. R. Downing, Merna.
Dr. A. R. Everett, Kimball.

EDITORIAL PARAGRAPHS

When people consult several physicians consecutively, the last one is always right!

The Pacific Physiotherapy Association will hold its annual meeting at the Alexandria Hotel, Los Angeles, June 21 and 22.

It is reported that there were 1,538 divorces granted in Nebraska during 1928; 82 less than in 1927; and that there were 9,932 marriages.

A new anaesthetic is said to have been developed in Indianapolis that is reported to work rapidly, smoothly, and without distressing after effects.

Two new ads appear in this number of the Journal—the Kansas City Clinical Society and Mead Johnson Co. Read the ads and patronize the advertisers.

The Scientific Session of the American Heart Association will be held in Portland, Oregon, on July 9, 1929, during the meeting of the American Medical Association.

The explosion at the Cleveland Clinic, with its horrible toll of human lives, occurred during the time of the annual meeting. A message of sympathy was ordered sent to Doctor Crile.

The average length of life has increased at least 16 years during the past 75 years; but this is said to be due to the lesser mortality of infancy and childhood, not of later years.

The class rooms and laboratories of the Creighton University College of Medicine will be enlarged during the summer to enable the school to admit double the number of students.

It appears that liver has great powers of regeneration, that a part can be cut away and the liver will grow larger. From 65 to 75% can be removed, and in six to eight weeks the lost part is restored.

Among the many able papers presented at the annual meeting that on the "Ketogenic Diet as a Treatment for Epilepsy" stands apart as an able presentation of a matter of great importance to the profession.

Dr. John A. Witherspoon, Nashville, Tenn., president of the American Medical Association in 1912 and one of the outstanding men among outstanding men in organized medicine, died April 28, 1929, aged sixty-four years.

It is said that liver may become a substitute for insulin in the treatment of diabetes and studies along that line are now being made at Peter Bent Brigham hospital, Boston. Certain liver fractions have an effect on blood sugar.

Dr. A. S. Lovenhart, of Madison, Wis., one of the world's most noted scientists, died following an operation at Johns Hopkins hospital, at the age of fifty-one years. He was interested recently in the study of the African sleeping sickness.

Gifts amounting to $122,000 for medical research for the current year and a campaign now in progress for $250,000 for special endowment have been announced by Dean Samuel A. Brown of New York University and Bellevue Hospital Medical College.

In the case of the Chicago Medical Society against Dr. L. C. Schmidt, noted urologist, expelled for being connected with a charitable or semi-charitable clinic we suspect the society went off half cocked. One is reminded of fundamentalism in religious discussions.

The United States Civil Service Commission advised an open competitive examination for Bacteriologist at Honolulu, applications to be on file not later than July 3. Entrance salary $4,000 per year. Applicants will be rated on their education, training, experience and fitness and on publications filed.

Dr. J. M. Willis, McCook, Nebr., informs the Journal and wishes the information broadcasted, that a Mr. W. C. Eldred, representative of the Engeln Electric Co., Cleveland, Ohio, has disposed of some electric apparatus for him and failed to account for it and that he has information that the same person has several other similarly shady transactions to his credit.

The Chamberlin-Vanderbilt Hotel at Old Point Comfort, Va., has been selected for the annual meeting of the American Pharmaceutical Manufacturers' Association to be held June 3-6. The meeting this year will take on an international aspect as invitations have been extended to more than twenty-five leading Canadian manufacturers to attend and participate. Representatives of the British Chemical Manufacturers have also been invited.

For the first time national and international recognition is to be given to the scientist who makes the greatest outstanding contribution of the year in the field of mental medicine. Announcement was made today by the Hon. George W. Wickersham, as Honorary Chairman, of the establishment of the Thomas William Salmon Memorial to accomplish these purposes, in honor of the late Dr. Thomas W. Salmon, former Professor of Psychiatry of Columbia University and Medical Director of the National Committee for Mental Hygiene.

Publishers of periodicals printing fraudulent and indecent advertising have signed a stipulation agreement with the Federal Trade Commission to abandon publication of advertising that does not truthfully represent either the products advertised and offered for sale or results obtained from use of such articles. Signing of the stipulation by the company of its own accord obviated the necessity of formal proceedings on the part of the commission. This stipulation is in part a result of policies evolved at a trade practice conference of periodical publishers last October, when the industry sought to determine way of eliminating fraudulent advertising and of encouraging publishers to assume responsibility for rejecting advertising that was obviously fraudulent, indecent, or otherwise objectionable.

FOURTH ANNUAL MEETING WOMAN'S AUXILIARY NEBRASKA STATE MEDICAL ASSOCIATION

The Annual Meeting of the Woman's Auxiliary of the State Medical Association of Nebraska, which was held at Omaha, May 14, 15 and 16, marked the close of a year of real achievement. Nine organized counties were reported with 269 paid memberships at the close of the convention.

New officers were elected as follows: Mrs. A. P. Overgaard, president, Omaha; Mrs. Oliver Everett, vice president, Lincoln; Mrs. F. L. Wilson, treasurer, Stuart. New directors: Mrs. George B. Dent, North Platte; Mrs. A. E. Cook, Randolph; and Mrs. F. A. Long, Madison, was made a life long member of the board of directors. Delegates to the National meeting at Portland are Mrs. Clarence Rubendall, Omaha; Mrs. B. M. Kully, Omaha; alternates, Mrs. C. A. Selby, North Platte; and Mrs. A. W. Anderson, West Point.

Tuesday, May 14, the convention was opened at the headquarters at the Elks Club with the annual executive meeting followed by a luncheon at the Chamber of Commerce where Dr. E. R. Hays of Falls City gave an instructive address on "The Cost of Sickness." During the afternoon the members of the Omaha-Douglas County Auxiliary were hostesses at a tea which was given at Conkling Hall on the campus of the University of Nebraska College of Medicine.

Wednesday, May 15, the annual business meeting was held at headquarters. Dr. Frederick Langdon, president of the Omaha-Douglas County Medical Society, gave an address of welcome in which he said that health education is the most important work of the Auxiliary. Mrs. G. Henry Mundt brought greetings from the Woman's Auxiliary of the Illinois State Medical Society. Reports were given by the representatives of the county auxiliaries. Good, normal growth has marked the various lines of endeavor and much has been accomplished by the county auxiliaries. A report of the National meeting at Minneapolis was read by Mrs. Rudolph Rix who was the official representative in the absence of the Nebraska state president. Mrs. Rix gave many interesting details of the convention which included words of encouragement and advice from members of the House of Delegates of the A. M. A. in which they advised us to be careful of the quality of our leadership and to remember that we are different from all other clubs of women, to avoid entangling alliances and to use our influence, collectively and individually, for health education and sanitation, and above all things, to promote and foster a more friendly feeling among doctors and their families. Immediately following the business session luncheon was given at the Omaha Country Club after which a splendid program was presented. An address of welcome was read by Mrs. B. B. Davis, president of the Omaha-Douglas County Auxiliary. A response was made by Mrs. S. A. Preston, president of the Women's Auxiliary of the Nebraska State Medical Association. Mrs. G. Henry Mundt, of Chicago, president of the Auxiliary of the

Illinois Medical Association was an honor guest and spoke on the advisability and standards of organized medicine. Mrs. Mundt said, "Educate yourself along medical lines, acquaint yourself with the importance of legislation in order that you may be able to defend and help the profession intelligently. Consider the economics of all health measures. Public health problems must be carefully administered so that the taxpayers wil get the full value of their money expended."

On Wednesday evening a banquet was held at the Elks Club with 470 doctors and wives in attendance. Doctor F. S. Owen, newly elected president of the Nebraska State Medical Association, addressed the guests. Following the dinner a presentation of Bernard Shaw's "Arms and the Man" was given by the Omaha Community Playhouse. Randall's Royal Orchestra furnished the music for the dancing.

Thursday, May 16, a delightful automobile drive was arranged through the courtesy of the Omaha Chamber of Commerce.

—Harriette Conlin, Omaha,
State Publicity Chairman.

THE SOCIETIES

The regular meeting of the **Omaha-Douglas County Medical Society** was held on March 26th, 1929, with President Langdon in the chair.

Dr. B. M. Riley presented two interesting cases, one of Buerger's Disease in a woman aged thirty-eight, and one of Raynaud's Disease in a woman aged sixty-eight.

Dr. Ralph Major of Kansas City presented a very thorough discussion on Arterial Hypertension. The doctor discussed the developmental history of various apparatus for measuring blood pressure. He then presented a series of experiments both on animals and clinical cases to show the action of various stimulating and depressing substances in the physiology of blood pressure.

The **Omaha-Douglas County Medical Society,** April 9, 1929, meeting was called to order by Vice President Pollard.

Dr. Langdon read the result of the recent poll of doctors on the classified telephone listing, showing that the majority of the doctors desire the discontinuing of the listing.

Dr. Duncan was the principal speaker and talked on "Spinal Anesthesia—Personal Experience With 75 Cases". This was discussed by Drs. Langdon, Roeder, Summers, Brown, Herbert, Davis.

The **Seward County Medical Society** met at Milford, April 23, and following a dinner, Drs. J. J. Hompes, George W. Covey and Floyd Rogers of Lincoln read papers. Dr. R. B. Adams, State Association secretary, was present and gave an account of the way the $8.00 dues was spent and it was a revelation to most of those present at the meeting. He explained how the work is carried on through the various committees. His presence at most of the county society meetings at least once would be of great educational advantage. Dr. H. B. Cummings, Seward, gave an interesting talk.

—C. W. Doty, sec.-treas.

The **Cedar-Dixon-Dakota-Thurston-Wayne Counties Medical Society** held a postponed meeting at Hartington, the dinner guests of the local profession, April 24, twenty-four physicians being present.

Dr. F. G. Dewey of Coleridge spoke most interestingly on "Unfortunate Experiences in a Country Practice," his talk being filled with thoughts that held the closest attention of the other doctors. "Common Skin Conditions Met in General Practice" was the subpect .discussed by Dr. J. D. Lutton of Laurel. Mixing some humor with his serious thoughts, Dr. Lutton made a real hit with his hearers. The final paper on the program was given by Dr. John Buis of Pender, who discussed "A Case of Malta Fever" in a very interesting manner.

The regular program was followed by a number of short discussions on varied topics, practically all the doctors joining in on this part of the meeting.

The next meeting will be held in June in Emerson, Nebr.

—C. L. Phillips, sec.

The April meeting of the **Madison Five County Medical Society** was held at Neligh, April 19. Dinner was served at the Stratton Hotel to about forty doctors and their wives. Dr. Lucien Stark, Norfolk, gave a case history of Undulant fever. Dr. U. S. Harrison, Neligh, presented a case of Sporotrichosis of the lower eyelid in a girl age 8. Dr. E. Kelley and Dr. E. C. Henry of Omaha gave an interesting presentation of a Case of Brain Abscess, unique in that they had their patient with them, both before and after operation, by means of moving pictures. In this way the most important symptoms, enumerated by Dr. Kelley were fixed by the picture. The treatment stressed by Dr. Henry was not to give morphine in a case of brain injury as that helped to inhibit the respiratory centers and cause needless death in many accidents. Use luminal sodium instead.

—G. M. Hansen.

The **Otoe County Medical Society** and the Otoe County Bar Association held a joint meeting at Nebraska City, May 6, following a dinner at the Frontier hotel. Dr. R. W. Fouts, Omaha, indicted shyster lawyers and Judge Frank S. Howell, Omaha, paid his respects to expert medical testimony. He advocated a law that would give courts the power to appoint experts to give midecal testimony.

The **Lincoln County Medical Society** met at the North Platte Country Club on the evening of May 9, 1929. A banquet was served at 7 p. m. The regular business was then taken up. Dr. Roy Fouts of Omaha, chairman of the state Medico-Legal Defense committee, gave an address on Malpractice Testimony which was followed by a round table discussion. Mr. Bush, representing the United States Fidelity and Trust Co., then gave a talk on insurance protection for doctors. This was also followed by a round table discussion. The Lincoln County Medical Society meets once a month at a noon luncheon at the Elks club. After the luncheon a medical or surgical subject is presented by one of the members. The attendance is good and all the members are enthusiastic boosters for the society.

—J. B. Redfield, Pres.

HUMAN INTEREST TALES

Dr. O. C. Kreymborg has moved from Hartington to Brainard.

Dr. and Mrs. E. J. Latta, Hastings, are on a motor trip to California.

Dr. C. H. Maxwell, pioneer physician at Dakota City, is reported ill.

Dr. E. A. Whitehead was elected president of the staff of St. Joseph's hospital, Alliance.

Dr. G. H. DeMay, Grand Island, recently underwent an operation for removal of the appendix.

Dr. F. J. Kalal, formerly of Verdigre, has located at Silver Creek, succeeding Dr. L. W. Elwood.

Dr. Adolph Sachs, Omaha, spoke before the South Dakota Medical Society last month on Arthritis.

Dr. Chas. H. Arnold, Lincoln, spoke on The History of Surgery before the Inter-Professional Institute in Lincoln, in April.

Dr. G. E. Charlton, superintendent of the Norfolk State hospital, has been elected president of the Norfolk Rotary club.

The St. Joseph's hospital at Alliance is buiding a $150,000 addition which will increase its capacity to about one hundred beds.

Dr. J. M. Mayhew, Lincoln, addressed the Jackson County (Kansas City) Medical society, April 16, on Postpneumonic Myocarditis.

Dr. and Mrs. Russel Best and two children, of Omaha, will start soon on a trip that will keep them abroad for about two years. Dr. Best will attend various European clinics.

Dr. M. S. Horn, Bethany, suffered the amputation of an arm to head off a virulent infection acquired in the routine of practice and at the time this goes to press his condition is critical.

Dr. Alfred Brown of Omaha spoke on "Congenital Hypertrophic Pyloric Stenosis and Its Operative Treatment" before the American Surgical association at its annual convention in Cleveland the first week in May.

Dr. and Mrs. J. P. Lord, Omaha, are going to tour Europe this summer. They will attend the joint session of the British and American Orthopedic associations in London early in July and later will tour Norway and Sweden and other parts of western Europe.

NECROLOGY

L. E. George, Long Beach, Calif.; history of early training unavailable; practitioner at Endicott, Nebr., in the early eighties; died at Long Beach, Calif., April 7, aged about seventy-three years.

Alfred Lewis, Kansas City Medical College, 1881; for many years and until quite recently a practitioner of Valentine and Cherry county; died at his new home at some point in Arizona, about the first of May, 1929, aged seventy years.

SELECT YOUR STAR

Men's hearts beat high with enterprise,
And still great souls sail forth alone
To seek some land that westward lies,
To climb new heights as yet unknown.
In all the stars in all the skies
There must be one to make your own.

Select your star!—some deed to do,
Some wealth to win, some crown to wear—
Then, keeping to one beacon true,
Although there are a million there,
One purpose serve, one course pursue,
Through dark, disaster, or despair.

For few the heights will ever claim
Who follow all the trails there are,
And few will ever drift to fame,
Though winds may blow their ships afar;
Who hits the target first must aim—
In life's great sky select your star!

THE MAN WHO DOES HIS BEST

We can not all be famous—if we were 'twould cheapen fame;
We can not all be rich enough to give ourselves a name.
We can not expect to be distinguished from the rest,
But some reward is certain for the man who does his best.

COMMON STAINS AND HOW TO REMOVE THEM

Blood and meat juice. Use cold water; soap and cold water, or starch paste.

Bluing. Use boiling water.

Chocolate and cocoa. Use borax and cold water; bleach if necessary.

Coffee and tea. (Clear). Use boiling water; bleach if necessary. (With cream)—Use cold water, then boiling water; bleach if necessary.

Cream and milk. Use cold water, then soap and cold water.

Egg. Use cold water.

Fruit and fruit juices. Use boiling water; bleach if necessary.

Grass. Use cold water; soap and cold water; alcohol; or a bleaching agent.

Grease and Oils. Use French chalk, blotting paper or other absorbent; or warm water and soap; or gasoline, benzine, or carbon tetrachloride.

Iodine. Use warm water and soap; alcohol; or ammonia.

Ink. Try cold water; then use an acid or bleach if necessary.

Iron. Use oxalic acid; hydrochloric acid; salts of lemon; or lemon juice and salt.

Kerosene. Use warm water and soap.

Lampblack and soot. Use kerosene, benzine, chloroform, ether, gasoline, or carbon tetrachloride.

Medicine. Use alcohol.

Mildew. If fresh, use cold water; otherwise try to bleach with javelle water or potassium permanganate.

Paint and varnish. Use alcohol, carbon tetrachloride, chloroform, or turpentine.

Perspiration. Use soap and warm water; bleach in the sun or with javalle water or potassium permanganate.

Pitch, tar, and wheel grease. Rub with fat; then use soap and warm water ;or benzine, gasoline, or carbon tetrachloride.

Scorch. Bleach in the sunshine or with javelle water.

Shoe polish. (Black.) Use soap and water; or turpentine. (Tan). Use alcohol.

Syrup. Use water.

Stove polish. Use cold water and soap; or kerosene, benzine or gasoline.

Vaseline. Use kerosene or turpentine.

Water. Steam or sponge the entire surface of water-spotted materials.

Wax. Scrape off as much as possible. Use French chalk, blotting paper or other absorbent with a warm iron; or use benzine or gasoline. If color remains, use alcohol or bleach.

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THE PROBLEMS OF CHRONIC POISONING BY CARBON MONOXIDE GAS*

C. P. FORDYCE, M. D.,
Falls City, Nebr.

Our attention was centered on the effects of the daily inhalation of small quantities of carbon monoxide by a garage worker who presented himself at our office for aid. The history elicited negative facts as to personal and family disease. He was a periodic hard drinker, tonsils and teeth bad, and an inveterate smoker. He related that physically he was always below par, worst in winter. He related that his work was in an old building transformed into an auto shop which was heated by a coal stove and that an average of 6 engines were tested several times during the day and that the exhaust gas remained in the room. There was no ventilation except the occasional opening of a door in the ordinary pursuance of his business and that oftimes "the smoke almost got him." This particular history of air conditions was elicited because of the writer's occasional visit to this garage in which the condition of foul air was noted. The above facts represent the air conditions of practically every small town auto repair shop in the country and in many city shops. The later physical findings on this patient are identical with findings which we have made on other patients and in collaboration were found to be present in greater or less degree practically universally among garage workers over the country — a problem disclosing a hazard which can be remedied if unwary potential victims but recognize the danger and take the simple means to prevent it.

Inspection of our patient astonished us at the peculiar pallor of his skin. At once the question arose — Is he anemic? Blood counts were made on a number of mechanics. We endeavored to establish the fact of anemia as a result of CO poisoning. We could not do it. The red count averaged 4,500,000, hemoglobin was normal, determined by the Tallquist scale with 90% as normal. In some cases there was a polycythemia which is considered compensatory. The effect of a loading of red corpuscles with CO occasions a fresh supply of corpuscles thrown into the circulation in an effort to keep up the normal supply of oxygen.

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*Address in Medicine delivered before the annual meeting of the Nebraska State Medical Association, Omaha, May 15, 1929.

Glaister(1) examining stokers in gas works found in 3 counts.

Reds	8,200,000	Haemoglobin	62
	9,500,000		76
	11,200,000		90

Apfelback and Karasek(2), The Illinois Occupational Diseases Investigation found in 68 men an increase in the reds, 66% of men having over 6,000,000 reds with haemoglobin varying from 95 to 125%. Increase in white cells comes within 24 hours—18,000—44,000 always being a sign of danger to life. Pallor is probably of nervous origin affecting the subcutaneous circulation.

The patient just referred to complained of headache, dizziness, nausea, the pulse rate was increased, heart, lungs, urine normal. He was advised to rest from work for two weeks, at which time another blood examination made showed reds and haemoglobin normal. He installed an exhaust fan in his shop and has been in good health since. Foci of infection probably made him more susceptible to CO poisoning. It is difficult to get blood from volunteers, workers wait until they are in a state of invalidism.

It is possible for a mechanic in testing and adjusting a carburetor for 1 hour to absorb enough CO to show a carboxyhaemaglobin saturation of 22% with a concentration of CO in air less than 4 to 10,000. Bloomfield(3) United States Public Health Service vsited 102 repair shops in various large cities from Boston to San Francisco and the analysis of air disclosed an average of 2 parts CO to 10,000, highest 11 to 10,000; lowest .01. The Bureau of Mines Safety limit is 1%. The average number of cars in these garages was 80; average number of persons exposed 23. All shops depended upon natural ventilation through windows, doors and skylights. The condition is a real menace. The ordinary means of ventilation is not enough.

"In large garages in which no motor has been running for several hours, two or three parts of CO have been found in 1,000 parts of air. In small garages with an engine running idle for 10 minutes the air contained 20 parts of CO per thousand and when the engine was run 35 minutes the CO had increased to 32 parts per 1,000.(10) The ordinary means of ventilation should be supplemented by a mechanical ventilation producing 12 changes of air per hour.

Bloomfield states "from our observation it is felt that no matter what type of ventilation is in use in a repair shop the CO concentration will be excessive so long as motors are allowed to discharge their exhaust for any considerable length of time. It is a practice in most shops to test carburetors indoors, a practice that is obviously productive of much exhaust gas. It seems that this gas could be eliminated effectively by relatively simple means. One such system is to urge that cars entering the shop be obliged to shut off the motor within 30 seconds after admission. Whenever any carburetor adjusting is to be done a flexible hose can be attached to the exhaust pipe and extended up to the ceiling where it is connected to a pipe leading to a ventilator on the roof. With such an arrangement the hot gases pass out of the building. This method is used in all automobile factories.

Garage men admit that the air they work in is not right. They pay little attention to the danger of monoxide even if they know of its hazard, many believe they have a tolerance, and yet most any garage worker you would examine will disclose a condition of health below par and most of them will exhibit a pallor, particularly towards the end of the winter season after working for months in a closed room with the air poisoned by CO. The solution of this problem is the general adoption of forced ventilation. If artificial, forced ventilation is not used wherever CO contaminates the air the fact may be established that the workers probably have CO in the blood The process of ascertaining the amount of CO in air is too complicated for the average practitioner and it is not always possible to establish a condition of CO poisoning by blood count or haemoglobin percentage determination but if there is any suspicion of CO poisoning one can easily test the blood for carboxhyaemoglobin. The method is the TANNIN precipitation test. A drop of blood from the patient's ear is diluted with 3 drops of distilled water which at once lakes it—it dissolves the red blood corpuscles, producing a clear liquid. This is then dropped into a small glass tube with 3 times as much of a 1% solution of tannic acid which results in a precipitate in a few hours. If the blood contains CO this flocculent precipitate is brown. The test is simple, rapid and accurate.

The increasing use of gasoline engines in all fields of human activity brings about a pertinent problem, the effect of exhaust gases upon the engine operators themselves and upon the general public. Considerable scientific research has been done in industrial plants where employes are subjected to the deleterious effects of gases. There is one phase which has received but little attention—it is the health hazard in small town public garages where practically no effort has been made to purify the gas-laden atmosphere which mechanics are subjected to. As a consequence the health of the garage worker is generally below par. There is a menace also in domestic gas heating apparatus, and a hazard in city streets, due to the increasing congestion of people who must breathe this impure air.

Dysart(4) calls attention to the widespread use of gas both natural and artificial for room heating necessitating inquiry concerning the effect of breathing gas combustion products escaping into the air breathed. Vast numbers of gas heaters are manufactured without any provision for attaching flues to carry off combustion products. Flueless gas heaters are responsible for the great majority of CO gassings in Ohio. Gas hot plates caused a negligible number, gas cook stoves when used as room heaters for hours occasioned a few, gas fired water heaters were to blame for several deaths and a number of asphyxiations. In one winter in Ohio there were 43 deaths from gas fired room heaters, and but 7 from auto exhaust gas.

There is potential danger from kerosene stoves with wicks commonly used in homes and from radiant heaters which have vertical clay columns or glowers which are rendered incandescent by flames from a series of Bunsen burner ports located beneath, and the flames supplied by gasoline under pressure. Under even the best conditions in operation the radiant heater may give off no CO but it may give off other injurious combustion products. The sharp offensive odor noticed on entering an unventilated room is not CO. This smell of burnt gas is no index of the presence of the less apparent, deadly, odorless CO gas. This gas however is likely to be formed when the glow is more than ½ the distance from the bottom to the top. The stove may be properly operating at a given time but within a few hours may become a CO generator due to deflection of the flame or a small change in pressure. A remedy for all these hazards is to provide a flue leading to the outside to carry off the gas.

Two industries independently operated in practically every city and town in the country, tailoring and printing, offer great opportunities for the constant absorption of small quantities of CO. Linotypists are subject to the fumes of gas flames under lead pots as are clothes pressers who use gas heated irons. Investigations in Boston resulted in the positive conclusions that the ill effects complained of by many printers were due to the gas in the air. Their feeling of discomfort, headache, dullness and loss of appetite at the end of the day with chronic constipation were caused and aggravated by small quantities of CO breathed daily.

The public is generally conversant with the poisonous effects of automobile exhaust gas inhaled in a closed private garage. Newspaper accounts of frequent deaths is educating us to a recognition of safety first measures.

But there is not the widespread understanding among laymen or members of the medical profession of the health hazards from a continuous inhalation of small quantities of gas as obtains in the ordinary walks of life.

The problems of monoxide poisoning shape themselves into five parts:

1. What is the actual extent of poisoning?
2. Is there a difference in the character of the poisoning in the various industries?
3. Is there chronic industrial monoxide poisoning?
4. Does poisoning cause lasting damage to the victim after the monoxide is eliminated from the system?
5. What are the standards of allowable air vitiation which is requisite for safety?

A solution cannot be attempted without an acquaintance with the peculiarities of carbon monoxide gas and its physiological effects.

Carbon monoxide gas(5) is the most widespread and one of the most important poisons connected with human life and industry. It has no odor, or color, is slightly lighter than air, insidious in its physiological action and particularly treacherous because it can be present in dangerous quantities without being detected by any of the five senses. It is a far greater hazard than lead poisoning for which laws have been enacted to protect the individuals subjected to it and provision has been made for it in our compensation laws yet none has been made for carbon monoxide poisoning.

Carbon monoxide comes from two sources:

1. From illuminating gas used in heating industrial appliances.
2. Exhaust gases from internal combustion engines.

It comes into the confined air of inhabited places not only directly from open engine exhausts but from defective gas mains, tubing or appliances. Whenever gas flames come in contact with a cold object there is a probability of imperfect combustion, for the gas is chilled below its ignition temperature before it has time to burn.

Although CO is the cause of more deaths than the total due to all other gases it is an inert and nonpoisonous substance ASIDE FROM ONE SINGLE PHYSIOLOGICAL ACTION—that is, its combination with haemoglobin—the red coloring matter and oxygen-carrying element of the blood. Haemoglobin has 300 times the affinity for CO over what it has for oxygen. Monoxide displaces oxygen in the haemoglobin and poisoning acts wholly through asphyxia of the tissues—by oxygen privation.

In the onset of acute symptoms of CO poisoning the victim has a warning of pressure and throbbing in the head, blurred sight, roaring in the ears, lassitude, a caving of the knees followed by epigastric pain, sweetish taste in the mouth, nausea and a feeling of dryness and constriction in the throat. He feels unable to help himself—the exertion if made increases CO absorption and he may lose consciousness. Often there is a stage of excitement like alcoholic intoxication. If he gets to fresh air he becomes exhilirated and soon regains full possession of his senses. Headache is the most reliable subjective symptom and better than any artificial test. The headache is a distinct, localized frontal type, throbbing and intensified by lying down or on exertion. A bad sign is pallor with blue lips and accompanied by red blotches on the skin.

In mild symptoms the pulse is slow and strong but nearing coma the pulse changes to rapid and weak. In comatose patients brought to the hospital in the observation of Thompson, New York, the fever averaged 104, respiration labored and jerky 30-36. There were no urine changes. Victims may be in coma for 4-5 days and recover. Among emotional disturbances we note that the mind is not clear except with effort and surroundings seem strange, the temper easily upsets. The range may be from mere unreasonableness to hysteria with anger, grief, even maniacal manifestations not unusual. There is convincing proof that the gas has no direct baneful action on nerve cells or other tissues but injuries solely by robbing tissues in the forming of the combination carboxy-haemoglobin which is not stable but can be replaced by oxygen under tension.

In ascertaining the standards for the allowable vitiation of CO contaminated air requisite for safety, Henderson and associates(6) made a special investigation of the extent to which gas must be diluted with air to be harmless; this was made in connection with the Hudson River tunnel between New York and New Jersey. They established the rate of absorption to be 1% every 10 minutes per part of CO in the air. The duration of exposure is a limiting factor. A man breathing a low concentration of CO plus air does so at the above rate at first then the rate becomes slower. The CO displaces oxygen up to a point of an equilibrium due to the fact that the more CO the blood contains the greater becomes the force which this gas tends to diffuse out again in the air. If the oxygen pressure is high enough it can displace CO and thus completes the restoration of the oxygen carrying power of the haemoglobin. The blood is neither directly changed nor injured in the process. There is no measurable affect on coagulation units and no hemolysis.

Haemoglobin attraction for CO is 300 times stronger than for oxygen. The blood equilibrium for any concentration of CO in air has been obtained, and from such data a disassociation of blood graphed.

A man sitting at rest never absorbs more than ½ the amout of CO inhaled which he would take up if he stayed in the atmosphere indefinitely. Henderson concludes(8) that if the concentration exceeds 6 parts of CO in 10,000, men doing hard work for a short time are unfavorably affected. An exposure of 45 minutes to 4 parts of 10,000 affords complete safety; to 6 parts just a perceptible effect of discomfort, headache and nausea, 8 to 10 parts there is actual danger and over 10 extreme danger and at 15 death.

Symptoms are not appreciable until the blood is one-third saturated. A car, while warming up, gives off 1 cubic foot of CO per minute. In a room 10x10x20 feet this rate would make a dangerous concentration of 15 parts to 10,000 in a few minutes. When the victim gets into fresh air the elimination of CO is 30 to 60% reduction of blood saturation per hour.

A word on the treatment of gassed persons(9). A supply of fresh air at once is imperative. It is not always possible for a small or delicate person to drag a limp, unconscious form from a gas-filled room and the rescuer himself is in certain danger from the gas. About all he can do is open the windows and doors and send for help. Keep the patient lying down. The physician should give the victim oxygen inhalation as he eliminates the CO from the blood 4 times as fast as when atmospheric air is breathed. The addition to the oxygen of 5% of carbon-dioxide induces better pulmonary ventilation but manifestly this is practical only in cities or larger industrial plants where CO poisoning emergencies are common. The respiratory capacity of the blood is increased by artificial resuscitation. The Schaefer Prone Pressure Method is in universal use, but a victim with a big abdomen should have the Sylvester Method.

CONCLUSIONS

1. The general public should be warned repeatedly of the dangers of CO poisoning. All school textbooks dealing with such subjects as hygiene and home economics should stress the danger of CO poisoning and should inform concerning the principles in the safe management of gas fired domestic appliances of all kinds. Everyone should know how to administer the Schaefer method of resuscitation.

2. Ciampolini (7) of the Division of Industrial Hygiene, New York State Department of Labor, advises that chronic CO poisoning be made a compensable disease. We beg to differ from him. CO poisoning can be prevented by proper manipulation of combustion apparatus and by proper ventilation and these measures should be enforced by legislation.

3. There is a high CO content in the air of public garages and a potential dangerous amount

in homes and small workshops where natural means of ventilation are depended upon. We favor legislation or code rules requiring the installation of proper fluing or venting of all gas heat in appliances and the installation of mechanical means of ventilation with adequate provision for the disposal of exhaust gases.

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DISCUSSION

B. F. WILLIAMS, M. D. (Lincoln): Dr. Fordyce has so completely covered the subject of monoxide poisoning that it is not possible to add anything to the subject, considered from the strictly monoxide angle. The question of the influence of other toxic gases, however, in cases of monoxide poisoning, is a pertinent question, as well as the question of permanent injury following monoxide poisoning.

The study of Anoxemia by the department of Aviation Medicine contributes observations which may be of interest in the study of the "oxygen want", conditions encountered in monoxide poisoning.

They have divided Anoxemia into four types:

1st. Cases dependent upon improper saturation of the blood.

2nd. Deficient oxygen carrying power.

3rd. Venous or stagnant, where blood flow is reduced.

4th. When the hygrogen ion content of blood is abnormally low.

Haldane, in the study of Anoxemia, beginning with the question as to how long tissues can tolerate complete lack of oxygen, contributed very interesting data too comprehensive for discussion at this time. In discussing vascular changes, he says the capillary walls are injured by oxygen want, or monoxide, and as a result expand to make the blood stagnant. As an example of this he compares the action of the poisons of certain poisonous snakes.

The bulletin printed by the Department of Labor and its bureau of statistics dealing with carbon monoxide poisoning calls attention to the fact that our literature contains little upon the subject and that we must depend upon the French and more especially the British literature in the study of resulting neurological conditions.

One very interesting discussion in this bulletin is designated, "Relapsing Form", including the cases which have suffered monoxide poisoning and recovered only to have a return of symptoms after an elapse of several days, weeks, or months. Several cases are reported by Spiller and McConnell of Philadelphia, in which apparent return to health occurred and later rapidly developed one side paralysis and death. Mental disturbances, aphasia, convulsions, muscular colonus, dementia, blindness and deafness to say nothing of a multitude of neurosis have been included in this group of so-called relapsing cases.

Three cases which belong to this group I want briefly to report as within my immediately observation.

Case 1. A young man of 26 years employed by a public service company in a county seat town of Nebraska was assigned to the task of driving a truck, the cab of which was tightly closed. The history revealed that his predecessor had suffered severe dizziness, left the truck and fallen in his effort to reach a near by house, was carried into the house unconscious and later died without the cause of his death having been determined.

The new driver experienced innumerable attacks of dizziness, head pain, muscular weakness, and finally distinct mental symptoms followed a transient loss of consciousness. After a week he apparently recovered, returned to work and was later seized with hemiplegia, suggestive of an internal capsule hemorrhage. Mental symptoms became aggravated and the patient died with evidence of bulbar involvement, after a lingering ailment of six months. The conclusion accepted by the insurance company was that this man died of injury to the nervous system as a result of monoxide poisoning. The company did, however, contest vigorously until the examination of the truck revealed a sand hole in the exhaust pipe through which exhaust of the gas engine discharged constantly.

Case 2. One which was reported in literature and I saw only in consultation. The history of blindness following a severe headache which was attributed to the breathing of fumes of the carbon remover introduced into the gasoline which had leaked into the closed car. The history of this case would read like the progress of a multiple sclerosis in which death resulted after a progressiveness of three years. Settlement by the insurance company was made upon the basis of injury to the nervous system through benzol in the motor fuel.

Case 3. Under my observation at this time, a man of thirty-two years conducting an automobile garage in the Loop district of Chicago, often boasted that he could stand more gas than any of the other workmen. Thorugh long continued exposure he ultimately developed intense headaches and dizziness with a brief loss of consciousness. A few days later developed a facial paralysis and a little later a paralysis of the right arm which was transient but alarmed the patient so that he came to Lincoln to consult his family physician. After a week or ten days under treatment, the patient developed complete right side hemiplegia with a mental state of apprehensiveness and emotional instability.

All of the above cases were young men with negative serology. All had been subjected to exhaust engine gas to such a degree that they developed acute symptoms of poisoning.

The effects of benzol have been well recognized and when inhaled in small quantities over a period of time shows itself in profound anemia, loss of red and white blood cells, hemorrhage of the tissues, mucous membrane, purpuric spots on the skin, hemorrhage from the stomach and intestines, into the brain, or the spinal cord.

Stachelim experiments on frogs, having no more pure monoxide gas, substituted illuminating gas whereupon different results were obtained. To the picture of monoxide poisoning was added rigidity of muscles and convulsions, where no such results were observed when pure monoxide was used.

Stachelim determined the amount of benzol contained in the illuminating gas and adding the same proportion of benzol to pure carbon monoxide gas obtained the same rigidity and convulsive action thereby justifying the conclusion that benzol contained in illuminating gas the toxic elements which produced the symptoms.

Applying these observations to our cases of monoxide poisoning many of the baffling symptoms may be explained. There is at this time an increase in the use of coal tar benzol as motor fuel in which there is a fairly constant content of benzol in the motor exhaust. This leaves out of consideration other toxic substances known to be present, such as ethylene, and acetylene.

B. R. McGRATH, M. D. (Grand Island): Dr. Fordyce's paper brings up another obscure condition that must be kept in mind when we are studying the patient before we have the teeth and tonsils removed and the sinus and gallbladder extirpated. One of the last places we might look for carbon monoxide poison would be in the farm home. But with the development of modern machinery, it is one of the common places in which carbon monoxide poison may be found, and one which the essayist has not particularly dwelt upon. Small light plants being installed in farm homes and run by gasoline engines are a menace for this particular trouble in a great many instances. I have in mind a case in which one of my associates was called in the middle of the night. The man of the house got up feeling nauseated. He vomited and fell on the floor. His wife got up to look after him and was so sick she was unable to get him back to bed. She threw covers from the bed over him. In a little while the two children were vomiting.

When the physician arrived, they were all extremely sick. He though of food poisoning. The people had been in town and brought home some sausage from the butcher shop. They settled on that as the probable cause. They got to feeling better. About a week later, there was another call and the people were vomiting again. This time they had no sausage. The doctor heard the exhaust of the engine and inquired about it. The exhaust went into a barrel filled with stone. It was pretty well muffled. Each time the wind was blowing from the direction that carried the exhaust back into the house, the symptoms I have enumerated occurred. In the interval between the two times, the wind had been blowing in another direction, and they had been comparatively well. They were dragging along.

This is a thing we need to keep in mind, especially in investigating obscure conditions that we may attribute to infections. It is just another one added to our list.

H. B. LEMERE, M. D. (Omaha): Dr. Fordyce mentioned the permanent results from poisoning of carbon monoxide gas. Among those permanent results must be considered the effect on the different nerve structures of the body, and particularly on the optic nerve. Cases have been reported of optic atrophy following carbon monoxide poisoning. Probably they result through the method of the infection of the sympathetic vasomotor nerves.

There is one case reported by Dr. Witmer, of Washington, that made a tremendous impression on me in reading it. It was written in a dramatic manner and reads like a Sherlock Holmes story. The patient was a boy with optic atrophy with central acute vision, but the fields very much contracted. The occasion of the poisoning occurred in time of war. One of the men was called to Washington to fill a position, and in obtaining a residence, he could only secure a furnished house which was one of the older types of structures. He installed his family and was absent for sometime.

Immediately after the installation of the family in this house, a series of events occurred which sound like a ghost story. A child was taken ill. Other members of the family had all kinds of experiences. On walking in different rooms, they would see people meeting them and hear the fire department going down the street, and find the street empty. They would hear people addressing them with no one in sight, and would awaken from terrible dreams.

This went on for a considerable time until the gentleman's brother happened to visit the family. He decided something was wrong with the ventilation. He found an old furnace leaking through the floors and poisoning different members of the family, leaving one child with his field of vision permanently impaired.

If you want to read this account, it is most interesting, and found in the Journal of Ophthalmology, dating back eight years.

WILLIAM N. ANDERSON, M. D. (Omaha): There is one thing which comes to me and that is the hemoglobin estimation. In the few cases I have seen it is impossible to make a hemoglobin estimation. Unless you have evidence of red in your slide, you cannot estimate these other types of color. All you can say is that it is off color. Try as you will, you cannot get a color which corresponds to these in the blood. The blood count is important.

VICTOR LEVINE, M. D. (Omaha): I happen to be working for the Buick Corporation on this particular subject. The number of deaths is increasing remarkably, especially in the winter time. Among the causes I wish to mention an important one. One of the speakers mentioned it is not carbon monoxide but other gases in that mixture which are eliminated. We know ethylene, which is used as an anesthetic, is found, and acetylene and other gases which contribute to anesthesia. That we cannot help. We can help alcohol, which acts in the same capacity as ether and ethylene.

If you follow those who have met death by carbon monoxide poisoning, they have in many cases a smell of alcohol on their breath and alcohol in their stomach content. They have no desire to move out, and it only takes five to ten minutes to bring on complete anesthesia and lethal exodus.

Most of these cases happen in the early morning hours. Often the individual is trying to get in late after a party. He is completely exhausted and does not have any desire or ambition to leave the garage as quickly as possible. Another factor involved is one in which a man, having exhausted himself working, tries to get up at five o'clock and attempts to get out of the garage. He does not get out of it as quickly as he should.

The most striking thing about those who have died from carbon monoxide poisoning is that they have either a cherry red skin or a pallor. On opening them, the blood and tissues are bright red. That redness will persist even years after the body has been embalmed, if the undertaker does not entirely remove it. We find when they get a whiff of carbon monoxide, they seem to lose their will power. They may be in danger, but the poison affects them in such a way they refuse to move. Perhaps movement will increase the danger of the gas.

One thing I want to mention is the after-effect. The longer you are in the chamber filled with carbon monoxide, while recovery may apparently be easy, the greater are the after effects. There are two important after effects. One is the neurological disturbance, and the other is the danger of pneumonia. The individual who has had an attack of carbon monoxide poisoning is liable to develop pneumonia even many years after.

Dr. Fordyce has discussed this rather interesting subject very ably. He has covered the field completely. The most important method of treating such an emergency has been mentioned by him as being carbon monoxide and oxygen—a mixture of 5 per cent. This mixture of carbon monoxide and oxygen is found in every city in the fire departments, and I do not see why every hospital and small town could not get such an apparatus, especially since it is comparatively inexpensive. This apparatus might be taken from one place to another. It is quite effective because it increases the respiratory stroke and washes out the carbon monoxide a little more quickly than oxygen itself.

Last, I want to mention a fact which Dr. Fordyce has found: that we cannot tell by the blood count why the individual has such pallor. Quite often we have high hemoglobin and red cell. There may be polycythemia with increase of red cells, and probably it is compensatory. It takes little to bring about death. Two factors involved are the length of time to which the individual is exposed and the concentration. In an ordinary garage with the doors closed, you may develop 50 to 60 per cent with one thousand, which means death in ten minutes.

DR. FORDYCE (closing): The carbon monoxide hazard in streets under normal conditions is not excessive. However, on congested highways and main streets during times of heavy traffic there is a concentration of 1 to 3 parts to 10 of air. There is no such concentration found in city streets as found in garages but the effects produced by long continued breathing of small amounts is the same.

The new systems of traffic control in vogue mean that starting, stopping and idling of engines is necessary. As a result there is often a blue haze hanging over the streets especially if there is much humidity. Smoke and its accompanying smells means burnt oil and though disagreeable it is not an index of the toxicity of exhaust gases. There is a real danger with or without the fumes of burnt oil due to subtle colorless, odorless CO in concentration.

Henderson and Haggard studies the representative conditions in streets of New York City and recommend vertical exhaust pipes discharge above the breathing level. Ideal but not likely to be used in automobiles.

Traffic patrolmen are affected most. Wilson of Philadelphia found the majority of them to have from 0 to 30% carboxyhaemaglobin.

The Bureau of Sanitary Engineering, Chicago, report the presence of CO .36 parts to 10,000 parts of air, and conclude that no hazard is present in Chicago streets, probably due to the rapid dissemination of CO in the air. The same conclusion obtains probably in the streets of Omaha.

City buildings are increasing in height and motor traffic is increasing while the streets are thronged with pedestrians, especially during the rush hours. This increase in air pollution will always be a problem until some revolutionary change in motor designs are made.

There is more complaint from one motor car throwing out a visible cloud of smoke and malodorous fumes of burning oil than there is from 1000 normally operated cars though the latter effects far more injury to health from CO.

In large cities many susceptible people are employed for 7 to 8 hours a day in the atmospheres of street level. CO reduces the chances of robust health and a vigorous vitality, even though definite symptoms of poisoning are not recognized. .31 parts of CO to 10,000 parts of air averaged in 649 samples taken in city streets. If uniformly distributed there is little cause for apprehension but such is not the case. CO is concentrated greatest along boulevards 0.4, along traffic streets it is 0.2 and on residential and industrial streets 0.1. There is a concentration of 0.2 and 0.3 in the loop district, Chicago, where the greatest number of people are exposed.

In general the concentration of CO in our city streets, other than on boulevards is insufficient to constitute a serious public health hazard.

PROGRESS OF SURGERY

(A Review of the Literature for the Past Six Months)

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THYROID

Williamson and Pearse(1) in 1925 found that the thyroid has two functions: (1) The production of secretion proper; or what for greater precision may be called "lymphogenic" secretion. This secretion contains no thyroxin. (2) The accumulation of colloid. In the normal secretory process is the conspicuous activity of the reticulo-endothelial cells with the production of lymphocytes in the interfollicular lymph spaces of the thyroid gland units. The authors looked for a class of thyroid disorder in which the functional imbalance would lie in the over-production of lymphocytes during the secretory process of otherwise normal thyroid. They found a few such cases which they named "lymphadenoid goitre." Goitres which essentially belong to this group have been called by earlier observers "chronic inflammatory thyroiditis," "granulomatous thyroiditis," "endothelioma," "sarcoma," and also "Riedel's disease," or "woody thyroid," etc.

The process is as follows: The lymphogenesis becomes more active and the lymphocytes crowd in the perivascular lymph spaces about the capsule of the gland-units. The parenchyma, which is producing lymphogenic secretion, becomes hyperplastic, and active mitosis appears in the epithelium. Lymphocytes only accumulate in and about those gland-units wherein lymphogenic secretion is being formed. In the follicles where colloid is accumulating there is no perifollicular lymphocyosis. Exhaustion of the epithelium eventually ensues, and now, no longer able to produce secretion it becomes atrophic. An insidious fibrosis ensues, until it replaces the reticulo-endothelium of the gland-unit. The once much enlarged thyroid tends to shrink into a small knot of fibrous tissue. This is the gland of myxoedema.

McCarrison has for many years been concerned in demonstrating that the thyroid gland plays an important work in the general metabolism. He found a diet, containing an abundance of iodine, which gave rise to a disturbance of the lymphogenic function of the thyroid gland. In other words, he has produced experimentally a lymphadenoid goitre. He was guided in his choice of diet by a previous work of his which showed the overwhelming influence of vitamins in intestinal lymphogenesis.

In the human the age at which symptoms arise is rarely before 45 years, while myxodema occurs on an average a decade later.

McCarrison(2) in approximately 25 percent of young rats fed on a diet of American white flour, 72 to 82 parts; meat residue, 5 to 15 parts; olive oil, 8 parts; salt mixture 0.45 per cent of potassium iodide, 5 parts; distilled water *ad lib* is able to produce lymphadenoid goitre. He thinks, therefore, that the basal factor in its causation in man is also a dietetic one. The diets which are likely to be associated with lymphadenoid goitre in man are those composed largely of white flour or other vitamin-poor carbohydrate, vitamin-poor protein, and vitamin-poor fats in which there is a paucity of fresh fruit and green leafy vegetables.

Crile(3) states that the symptoms of hyperthyroidism are the same as the symptoms of adrenalism. Both cause increased heart action, increased blood pressure, dilation of the vessels of the skin and sweating, dilation of the pupils, increased metabolism, hyperglycaemia, profound effect on the gastro-intestinal tract, and activation of the nervous system. The injection of adrenalin in a patient with hyperthyroidism produces an exaggeration of every symptom of hyperthyroidism. On the other hand, no amount of thyroid extract or of iodine can immediately cause any symptom of hyperthyroidism.

Experimental evidence, says Crile, also confirms the clinical observation that as the thyroid activity is increased, the effect of adrenalin on the organism is stepped up. In myxoedema the injection of adrenalin has little or no effect. Therefore, the thyroid and the adrenal glands are each equally essential in the production of hyperthyroidism.

Nervous excitation is known to be the cause of many cases of hyperthyroidism. Relief of nervous strain leads to relief of symptoms and the return of the hyperplastic gland to normal. In cases of hyperthyroidism the division of the nerve supply to the thyroid causes great improvement. Everyone of the known excitants of hyperthyroidism, namely, infectious diseases, focal infection, emotional excitation, etc., involves nerve excitation which in turn produces an increased output of adrenalin. The adrenalin, in turn has the power of activating the thyroid. Therefore, Crile advocates primary adrenalectomy in cases of extreme hyperthyroidism.

The thyroid hormone causes a specific increase in the permeability of all the cells of the body and hence an increased activity of all these cells. A consequence is an increase of the electrical potential and in the electrical conductivity of the tissues. Thus the thyroid charges up the tissues. The discharge mechanism is entirely separate from the thyroid gland—it is the nerve-adrenal combination. Thus in the post-operative treatment of a patient with hyperthyroidism all factors are avoided which tend to stimulate the adrenals or the nervous system.

GASTRO-ENTEROLOGY

Two cases of gastric carcinoma in which there are no metastases but in which the local tumor is large and fixed to neighboring structures are described by Chamberlain.(4) Both these cases were operated upon by Sir Berkeley Moynihan. A primary laparotomy is done, and through the open wound a big dose of deep x-rays given directly into the tumor. A second operation is done six weeks later, when the growth is much shrunken in size and much more freely movable. The two cases are both still alive and well, one, four and a half, and the other five years after the operations.

Martin and Hill(5) found that after oral administration of mercurochrome to the point of salivation in thirteen individuals; (a) the bile was never bacteriocidal or inhibitory and never contained visible traces of the dye. (b) the treatment had no alleviating effects upon the symptoms of eight individuals with cholecystitis.

Following intravenous injection of mercurochrome in man the dye may be demonstrated in the bile siphoned out through a duodenal tube in 18 to 23 minutes. This bile is bacteriocidal and contains mercury. This lasts 18 to 20 hours. Of eight patients treated this way, three were not helped, but five are clinically cured and their bile specimens were sterile. Due to storage of mercurochrome in the gallbladder it is possible to obtain its shadow in the Roentgen-ray films.

In a study of experimental general peritonitis produced in dogs by ligating the base of the appendix, Orr and Haden(6) found no beneficial results by treating with ileostomy from the beginning. However, animals treated with 1 percent solution of sodium chloride hypodermically in addition to the ileostomy lived three times as long as those having no salt solution. The administration of sodium chloride solution was quite effective in preventing the chemical changes of the blood noted in animals without such treatment. The results of treatment with sodium chloride in this study are similar to those previously recorded in the treatment of high intestinal obstruction.

In 1927, impressed by the clinical similarity between acute intestinal obstruction, general peritonitis, and the toxemia of gas gangrene, Williams investigated the importance of toxemia due to anerobic organisms in the first two conditions. By the use of bacillus Welchii antitoxin he reduced the mortality of peritonitis following acute appendicitis from 6.3 percent in the controls to 1.17 percent; and in intestinal obstruction from 24.8 percent in the control series to 9.3 percent. Bower and Clark last year substantiated these results.

Copher, Stone and Hildreth(7) working on dogs, found that its use prolonged life slightly in these conditions.

McIver, White and Lawson(8), on the other hand, found that bacillus Welchii, although found in enormous numbers in the obstructed loop, did not play an important role in the production of the fulminating toxemia.

Winkelstein and Marcus(9) have studied the excretion of neutral red in the stomachs of sixty cases of achylia gastrica. They think it is excreted in any stomach that is capable of secreting free hydrochloric acid, whether the acid itself is excreted at that particular time or not. They consider neutral red is superior to histamine for routine use as tests for achylia gastrica. It is invariably excreted in the false achlor-hydrias; that is, in which free hydrochloric acid is secreted but is neutralized so the ordinary gastric analysis shows it to be negative.

Balo and Ballon(10), from a series of 963 consecutive autopsies in Budapest, give case reports to prove that retention of pancreatic secretion may cause dilation of ducts and end chambers, flattening of the cells of the glands of the pancreas and necrosis. There may also result an increase in size of the islands of Langerhaus. This retention may be caused by narrowing of the main pancreatic duct or papilla of Vater caused by inflammations, stones, neoplasms, etc.

EXTREMITIES

Buerger(11) found that injection of emulsions of the clot from cases of acute thrombo-angiitis obliterans into the veins of the forearm caused no lesion. But the paravascular implantation of the clot from these cases resulted in the development of typical lesions in the apparently healthy ligated veins of the inoculated person. In similar experiments in monkeys he failed to produce other than bland thrombosis, a fact that would suggest that these animals are immune.

An excellent study and review of the subject of Dupuytren's contraction by Kanavel, Koch, and Mason(12) emphasize the following points in treatment:

1. Wide excision, not only of the contracted fascia, but of all its attachments to the skin, the interfascial septa, the volar interossious fascia, the metacarpal bones, and the phalanges.
2. Careful dissection and elevation of the skin to avoid trauma and subsequent necrosis.
3. Painstaking effort to avoid injury or division of the digital nerves and blood vessels.
4. Excision of skin that is hopelessly involved, and replacement of the excised skin by a free full thickness graft rather than attempting to bring together wound edges under tension.
5. In long standing cases with marked contraction of the fingers, excision of the head of the proximal phalanx and shortening of the extensor tendon of the affected fingers through a dorsal incision (Hutchinson's operation).
6. Active movement of the fingers and hand as soon as the operative wound is soundly healed.

If treated in such a manner complete restoration of function may reasonably be hoped for, although cellular infiltration of the hand and partial anaesthesia and stiffness of the fingers may persist for a considerable period of time after the operation.

Inspection of x-ray films of the extremity in cases of arteriosclerotic gangrene does not often indicate by the calcification in the arteries the profound changes and the general involvement of the arterial system by the arteriosclerosis and endarteritis. Inspection of films made of amputated legs in which the arterial system was injected with barium shows this general change clearly. Measurements by Emerson and Warren⁽¹³⁾ with calibrated rods of the inside diameter of six major arteries in the leg agree closely with those made upon x-ray films following injection of the arteries with barium. The future use of opaque media injected into peripheral vessels will make it possible to measure these vessels accurately and determine the extent of the disease. This opaque substance must be harmless, non-irritant to the vessel walls, and readily excreted from the body.

Adson and Brown(14) have reported two cases of Raynaud's disease of the upper extremities successfully treated by resection of the sympathetic cervicothoracic and second thoracic ganglions, and the intervening trunk. The results obtained in the upper extremity by this procedure are comparable to those obtained with the removal of the lumbar sympathetic ganglions in the lower extremities. Failures following ramisectomy and partial ganglionectomy are due to incomplete division of vasoconstructor fibers supplying the peripheral circulation of the extremities.

In five cases of resection of the lumbar sympathetic ganglia and trunks, they(15) had marked and maintained vasodilitation in the feet for as long as three years, with complete relief of the signs and symptoms of this disease.

In order to learn the results and risks of the different methods of treatment of varicose veins of the legs, Kilbourne(16) sent a questionnaire to the large American hospitals. In a total of 4,607 cases operated upon there were eight deaths accredited to embolism and ten others due to unknown causes. This is a risk of one in 250, or 0.4 per cent. Following injection treatment there have been eleven deaths reported in a total of 53,000 cases treated. This is about one in 5,000. Injection results are also much better than after excision; recurrences after injection average 6 per cent and after operation are 30 per cent. Although embolism, phlebitis, ulcer formation and gangrene are rare, no injection should be made until they have been prevented by thorough preliminary study.

MISCELLANEOUS

The treatment of facial paralysis is discussed by Fischer(17). To reestablish the function of the facial nerve an anastomosis has been made between the peripheral stump of the facial and the central stump of some motor nerve lying in the neighborhood. Ballance, Faure and Furet have used the accessory nerve or one of its branches—the *ramus sternocleidor mastoideus* or the *ramus trepezoideus*. Korte, in 1903, employed the hypoglossal nerve. This latter is generally acknowledged to be the best method. However, there is no result for several months, there is usually simultaneous movements of the face when the tongue was moved, and for several months paralysis of the tongue makes speech, swallowing and eating difficult.

Another method used has been muscular plastic operations. The author proposes an operation in which he uses a strip of fascia lata as a graft to hold the angle of the mouth to the zygoma. He reported his case, a girl aged eighteen, on whom he did this operation with excellent cosmetic results. He thinks this simple operation should have preference in cases of facial paralysis before the other complicated plastic operations. The idea was original with the author but since sending his paper to press he found that Kirscher had the the same thing in 1913.

Koontz(18) found alcohol-preserved fascia grafts have been successful in repairing defects in the stomach and bladder, and to reinforce suture lines at anastomosis points in the intestine. Digestion of the graft in the stomach was prevented by giving bismuth subnitrate by mouth. The fascia used was from the fascia lata of the ox. The experiments were on dogs.

Monteith and Clock(19) use normal horse serum applied as a spray in the treatment of burns. This was first used by Robinson in 1917 and is now revived by the authors. They immerse the burned part in a warm bath of normal saline and then remove all crust and necrotic tissue, it removes by dialysis the toxins generated in the burned areas, and thus prevents their absorption and the development of toxemia. Then normal horse serum prepared by the Lederle Antitoxin Laboratories is sprayed on and covered by rubber tissue which in turn is held on by a bandage. The tissue cells require a physiologic medium in which to multiply and build up the destroyed area; otherwise scar tissue will result. Normal horse serum coagulates the exuding tissue plasma and holds it in contact with the living cells, thus giving the physiologic medium. This serum is preserved in 0.35 per cent cresol which acts as a mild antiseptic. Apply the serum at least twice a day to prevent drying as otherwise the cells will die. Several case reports show excellent results.

Ewing(20) finds that the present available data seems to call for the recognition of a particular form of epidermoid carcinoma occurring especially in the nasopharynx and designated by

Regand and Schmincke as lympoepithelioma. These tumors arise from modified epithelium overlying lymphoid structures in tonsils, base of tongue and nasopharynx. They occur at all ages, frequently in young subjects, grow slowly, are often overlooked, tend to produce early metastases in the neck, and later wide-spread extensions to liver and bone marrow, and are generally fatal. They exhibit a marked primary response to radiation. The diagnosis must be based on the structure, which shows sheets of pale staining epithelial cells, often in syncytia, and infiltrated with many lymphocytes, both in the primary tumor and in the metastases.

Cheatle(21) reports transillumination of the breast for the purpose of diagnosis. This method was told to him by Dr. Max Cutler of New York. In a dark room the breast is gently impaled on the top of a curved Cameron light. All cysts are translucent; the subcutaneous veins on the surface of the breast are shown as branching shadows; papillomata are shown if there has been any hemorrhage into the duct in which they exist; and solid tumors appear as diffuse shadows.

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A HORMONE MECHANISM FOR GALLBLADDER CONTRACTION AND EVACUATION*

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In a search of the literature it has been found that several investigators have attempted to determine whether or not a humoral mechanism is concerned in gallbladder evacuation. Boyden (1926) found that the transfusion of blood of fed or starved cats caused a partial evacuation of the gallbladder. He does not state that he tested the compatibility of the blood of the cats used. He interpreted the results of his experiments on this phase of the gallbladder question as meaning that the gallbladder is sensitive to bodily conditions which effect changes in the circulating blood. Whitaker (1926) injected doses of "secretin" prepared by the Bayliss-Starling method with negative results. Copher and Illingworth (1928) injected "secretin" with negative results; but they do not state the method by which the "secretin" used by them was prepared. Brugsch and Horsters (1926) placed a condom balloon in the gallbladder of dogs and found that 10 cc of a preparation of Dale and Laidlaw (1912-13) "secretin" caused a contraction and rhythmic changes of the gallbladder, and "hypophysin" relaxed it. They observed that histamine (10 mgm.) caused the gallbladder to contract.

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**Doctors Eric Oldberg, Harold C. Lueth, and Grant Kloster collaborated with the author in this work.

They concluded that histamine and "secretin" act alike, the latter being the physiological agent. They did not make a simultaneous blood pressure tracing to rule out vaso-dilatation as being a factor, which we know is a factor.

The numerous reports in the literature showing the marked efficacy of fats, egg-yolk and meat protein in emptying the gallbladder convinced us that the effect of "secretin" on the evacuation and motor activity of the gallbladder should be studied, since it is well known that these substances stimulate the pancreas, and that "secretin" (very impure solutions) promotes the formation of bile. With this objective in mind, we have performed several series of experiments, the results of which prove, we believe, that a hormone mechanism is concerned in gallbladder contraction and evacuation.

For some time Ivy, Kloster and Lueth (1927) have been working on the purification of "secretin" for the purpose of perfecting a pancreatic function test for man. In our work we have used the preparations prepared for us by them. The solutions furnished us were "highly purified", were vaso-dilatin-free, and have had no objective deleterious action when injected intravenously in succession in anesthetized or unanesthetized animals.

EXPERIMENTS

It was found that an extract of the upper intestinal mucosa which, when properly prepared, was vaso-dilatin-free and caused the gallbladder to contract. This was found to be true of the gallbladder of the cat, dog and guinea pig, but an attempt on the rabbit to provoke such a response has proved to be negative.

The intra-gallbladder pressure rises from 1.0 to 11.5 cm. of bile from a single injection, and from a series of injections in unanesthetized dogs we have observed a final pressure of 24.0 cm. of bile.

We have shown that the rise in gallbladder pressure is not due to extrinsic influences such as respiration, abdominal movements, and change in liver volume. The contraction of the gallbladder is abolished by deep anesthesia and low blood pressure.

The active principle acts after atrophine and ergotamine, which indicates that it probably acts on the smooth muscle directly. We know that it is neither histamine or choline and believe that it is a poly-peptide. It is not related to bile or bile salts. We do not believe that it is identical to "secretin" but that it is closely associated with it. However, we are not yet certain of this point. We call the active principle "cholecystokinin."

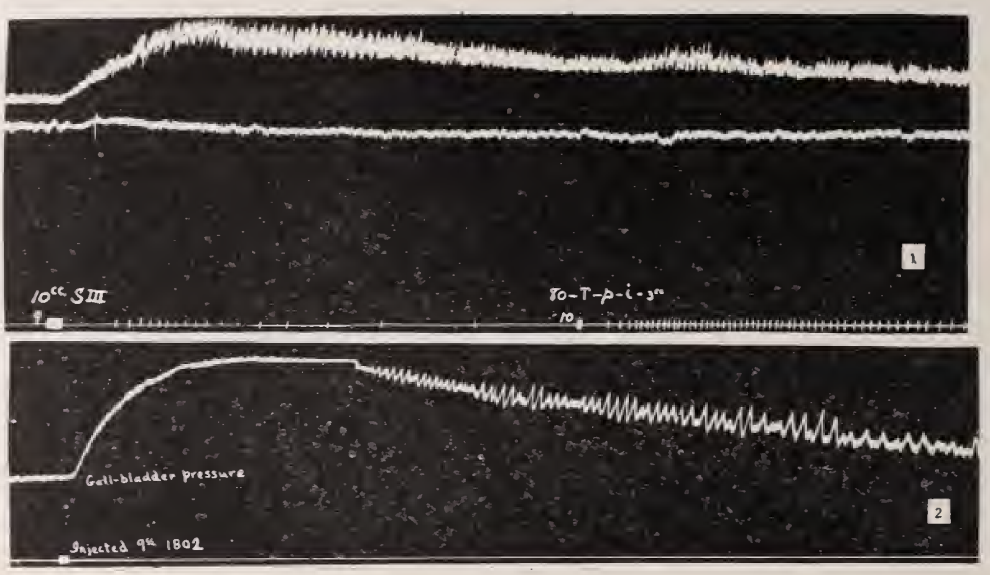

Figure 1. In tracing 1 the upper line is a record of the intra-gallbladder pressure, the middle line is a record of the blood pressure, and the lower line records the point of injection and the drops of pancreatic juice. Note that when 10 cc of S III were injected, the gallbladder contracted and 17 drops of pancreatic juice lfowed from the cannula, and that when 3 cc of 80-T. p. i. were injected only a slight contraction of the gallbladder resulted, but 52 drops of pancreatic juice were formed.

We have prepared solutions that gave response when as little as 2.2 mgm. of solid material were injected. However, we cannot uniformly repeat this procedure. We do have several processes which yield uniform results up to a certain point. The active principle becomes inactive on standing in a solution with a pH of 4.0, but does keep at a pH of 3.0.

In the course of this work we have found that dilute acid (0.4% HCl) placed in the duodenum of the dog causes a gallbladder contraction, as does digested egg-yolk, cream and olive oil when digested. Undigested olive oil has no effect on the gallbladder of the anesthetized dog.

In one dog out of a series of more than one hundred, we found that three-fourths of the gallbladder was free of the liver and could be readily seen through the abdominal incision. In this dog we observed that when the "cholecystokinin" was injected, an annular ring of contraction about 2 cm. wide appeared in the mid-portion of the gallbladder and disappeared as the effect of the injection noted on the kymograph tracing disappeared.

We next ascertained whether the gallbladder could be evacuated under the influence of "cholecystokinin." Under morphine-ether anesthesia and with aseptic technique, the gallbladder (ten dogs) was filled with lipiodol (iodized oil) after the removal of an aliquot portion of bile (from 15 to 20 cc usually). The dog was trained to lie quietly. From eighteen to twenty-four hours later, the animal not being fed, serial roentgenograms (from 2 to 10 minutes apart) were made, one dog's dose of the "cholecystokinin" preparation (a dose known to cause gallbladder contraction) being injected intravenously every ten minutes for one hour. A study of the roentgenograms and autopsy showed that in three of the ten dogs, all but about 3 cc of the lipiodol had been evacuated; in three, about two-thirds of the lipiodol had been evacuated; in three, about one-half had been evacuated. In one, only a small quantity was evacuated. This animal was given, three hours later, a meal of cream (200 cc), egg-yolks (6) and some milk. It was found that this meal caused no evacuation. The next morning a radiological examination and a picture showed a dense shadow, the lipiodol, and a line about 2 cm. away from the lipiodol shadow, which we interpreted as the gallbladder wall. We believed that fresh bile had entered the gallbladder during the night. Three injections of the "cholecystokinin" preparation were then given with the result that the outer line was caused to move in and make contact with the lipiodol shadow. We believe that this denoted that the fresh bile had been evacuated. Autopsy revealed that the lipiodol mass was almost gelatinous in consistency, and we believe so viscous that it could not be evacuated by the gallbladder. Similar gallbladder evacuation can be accomplished in dogs under light barbital anesthesia.

It should be pointed out that lipiodol is more viscous and dense than normal gallbladder bile, and hence is more difficult to evacuate from the gallbladder. The same evacuation of the gall-

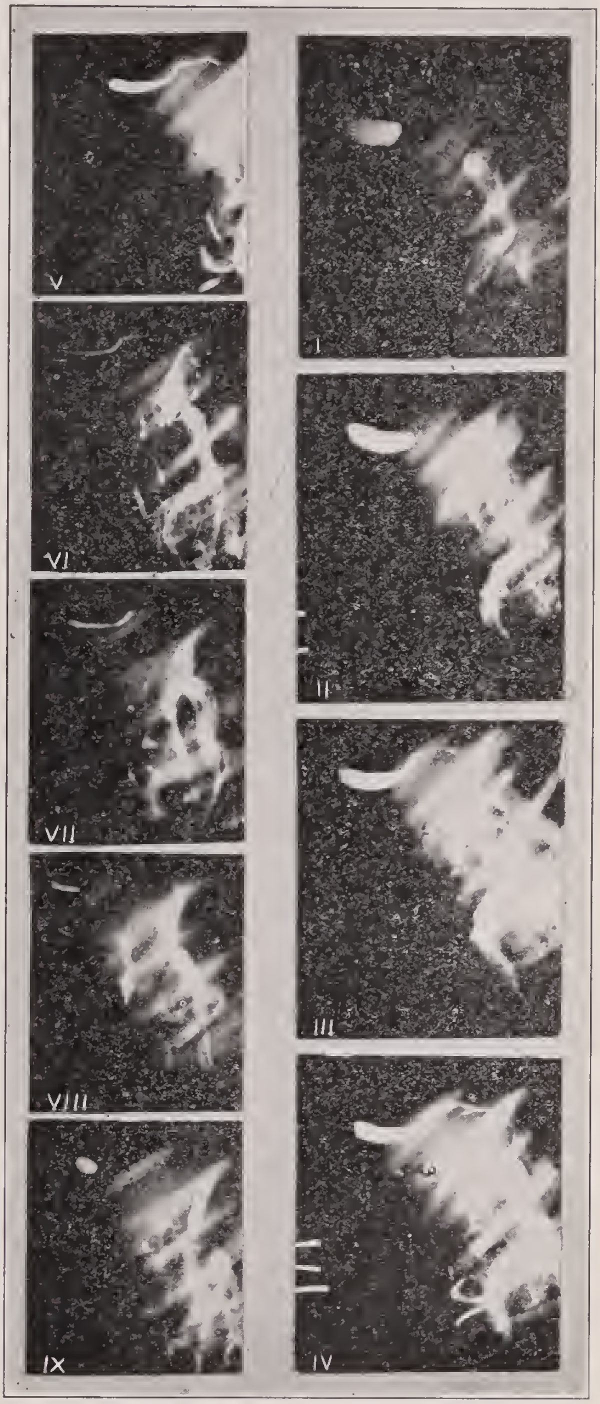

Figure 2. This figure shows a series of roentgenograms made on an animal whose gallbladder, having been filled with lipiodol the day before, was evacuated by injection of "cholecystokinin" every ten minutes. (1) The control; (2) 10 minutes after the first injection; (3) 2 minutes after the 2nd injection; (4) 10 minutes after the third injection; (5) 10 minutes after the 4th injection; (6) 10 minutes after the 5th injection; (7) 10 minutes after the 6th injection; (8) 10 minutes after the 7th injection; (9) one-half hour after the 7th injection. Note that the gall-bladder relaxed after the last injection which is denoted by the change in the contour of the shadow.

bladder can be observed using the Graham-Cole technique for visualization of the gallbladder.

An occasional roentgenogram from some of the dogs shows that the hepatic ducts are injected with lipiodol for from 0.5 to 3 cm. This occurred more frequently in the case of the right hepatic duct than in the others. We believe that this injection of the hepatic ducts is most probably due to increased pressure on the intramural portion of the common bile duct exerted by the duodenum, preventing the outflow of the lipiodol into the duodenum.

Proof of a Hormone. On the results of cross-circulation experiments. Four cross-circulation experiments (carotid-to-carotid) have been performed. three yielding positive results and one negative.

Dogs of a like size were chosen whose bloods were shown to be compatible by agglutination tests. They were anesthetized with barbital and placed on the table side by side. The abdomen of each dog was opened, the cystic duct clamped. and the gallbladder and the pancreatic duct cannulated. The gallbladder cannula was connected to a recording tambour. The lateral carotids were connected for a blood pressure tracing. and the two medial carotids were connected by cannulas for a cross-circulation. (See article by Ivy. Lim and McCarthy, 1925). Simultaneous records of the blood pressure, intra-gallbladder pressure. and pancreatic flow of both dogs were made.

In three out of four experiments the introduction of 40 cc. of N^{10} HCl into the duodenum of the "first" dog caused the gall bladder of the "second" dog to contract. The gallbladder of the "second" dog. or the one that did not receive acid in the duodenum, contracted after a period of eight minutes in one animal, ten minutes in a second animal. and twelve minutes in the third animal (figs. 9 and 10).

These experiments demonstrate that the introduction of the acid into the duodenum of the "first" animal caused something to enter the blood, which passed via the cross-circulation cannual to the "second" animal, causing the gallbladder of the "second" animal to contract.

The pancreas of the "second" animal was only stimulated in one of the four experiments.

SUMMARY AND CONCLUSIONS

1. An extract of the upper intestinal mucosa has been shown on intravenous injection to cause contraction and evacuation of the gallbladder. The extract (prepared by Ivy, Kloster and Lueth) is free of vaso-dilatin and has no objective toxic effect on unanesthetized dogs.

2. Cross-circulation experiments show that when acid is injected into the duodenum. something gets into the blood which causes the gallbladder to contract. We believe this observation proves a hormone mechanism for gallbladder contraction and evacuation. It is pointed out that other mechanisms may be concerned in gallbladder evacuation.

3. We propose the term "cholecystokinin" as a name for the hormone and the active substance in intestinal extracts, which causes the gallbladder to contract and evacuate.

4. The amount of pressure that results from the contraction of the gallbladder under the influence of "cholecystokinin" is for one injection a maximum of 11.5 cm. of bile pressure and a minimum of 1.0 cm., and for a series of injections an average of 10.0 cm. and a maximum of 22.5 cm. in anesthetized dogs; and in unanesthetized dogs for a series of injections it is an average of 20.0 cm. of bile and a maximum of 24.0 cm. of bile. The average duration of the contraction for a single dose is 15 minutes. Following a series of doses the gallbladder relaxes in from 30 to 60 minutes.

5. The injection of the following substances into the duodenum of the dog caused the gallbladder to contract with the animal under light barbital-ether anesthesia: 15 to 40 cc .of N^{10} HCl, 30 cc. of butter, digested egg-yolk, cream and olive oil, 0.5 per cent butyric acid, and 5 per cent soap solution. Undigested olive oil, egg-yolk and cream were ineffectual.

6. Spontaneous rhythmic contractions of the gallbladder were observed to occur from 2 to 4 times a minute. A small dose of "cholecystokinin" would usually increase their amplitude to as much as 3 cm. of bile pressure; a large dose would usually cause them to disappear at the height of the contraction, but they would reappear some time during the period of relaxation. If they were not present prior to the injection, they would frequently appear during the latter part of the period of relaxation.

7. We have observed the hepatic ducts to be injected with lipiodol during the contraction of the gallbladder.

We have interpreted the injection of, or the backing up of the lipiodol into the hepatic ducts, as being due to the pressure of the duodenum on the intramural portion of the common bile duct, or to a hypertonic sphincter of Oddi. The literature (Mann, 1924) shows that minimum pressure of 5.0 cm. and a maximum of 7.5 cm. of water is necessary to overcome the resistance of the sphincter of Oddi, or the intramural portion of the common bile duct. It is obvious, then, whether or not the gallbladder contraction leads to evacuation of the gallbladder depends on the amount of resistance of the sphincter or intramural portion of the common duct. If the duodenum were spastic, it is quite likely that the gallbladder would not evacuate even though caused to contract by "cholecystokinin."

TECHNIC OF DRAINAGE METHODS IN EMPYEMA

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Fifth of a Series of Articles on Thoracic Surgery.

Technique of Aspiration (Thoracentesis): Thoracic puncture and aspiration is a very minor surgical procedure. Dowd collected twenty-five cases of death or severe collapse following simple puncture and such an accident was more frequent when the opposite lung was diseased. A rare fatal result of simple thoracentesis has been attributed to reflex spasm of the glottis. The possibility of introduction of other organisms into the pleural cavity and the desirability of avoiding pneumothorax should prompt the observance of a careful technic. Preparation of the hands and of instruments and apparatus and the securing of an aseptic field of operation is as important as in opening other major cavities.

The Anaesthetic: Empyema and the associated pulmonary involvement as a rule contraindicates the use of general anasthesia, especially ether. Local anaesthesia is in every way efficient and satisfactory and is devoid of any intensifying of the lesions. Puncture and aspiration may be done without anaesthesia, but such a procedure is unwarranted. The patient should be spared the pain, shock and apprehension that must necessarily accompany repeated aspirations without an anaesthetic. The surgeon will be well repaid by greater cooperation of the patient, for the exercise of care in securing painlessly a good local anaesthesia. A small needle for the skin and slow injection, waiting for some effect of that already injected before proceeding farther affords an almost entirely painless injection. A longer and larger needle should be substituted for the one used for skin injection to infiltrate the intercostal muscle and the pleura. The upper border of the rib should be hugged to avoid injury of the larger inferior intercostal artery.

It is very necessary to know that the needles, syringes and vacuum bottle connections are adapted to each other. It is annoying to the surgeon and distressing to the patient to have a needle inserted, to which none of the available apparatus can be attached. Equipment for therapeutic aspiration should be ready.

The site for puncture will have been selected previously and will depend of course on the position of the pus. When the fluid is at large within the pleural cavity the sites usually selected are either in the sixth or seventh interspace in the mid-axillary line or in the eighth or ninth interspace in the posterior scapular line. Avoid if possible the space behind the angle of the rib where the intercostal artery may be injured. A good rule is to select a site anterior to a line four inches from the spinous processes.

With regard to the site for puncture attention may be called to what constitutes almost an optical illusion in radiographs of the chest. So much of the lung is above the arm pits and relatively so little below, that it is a common experience to misjudge of an encapsulated collection of pus and attempt aspirations much too low. Observance of an aspirating needle in the chest by fluoroscopy is often startling in the revelation of its true position.

The position of the patient should not be directly on the sound side, but rather supine or semi-recumbent and rolled slightly forward with the arm above the head. In this position interspaces are widened and function of the healthy side is not interfered with.

It is easy to fail to follow the path that was injected when the puncture is made unless special attention is given to it. The quantity of anaesthetic needed is far below a toxic quantity, therefor a 2 per cent novocaine may be used. More than 5 or 10 cc is seldom necessary.

Since the type of needle or trocar best suited for thoracentesis is large and dull and not easily pushed through the skin *a small skin puncture* with a bistoury facilitates this step and obviates a sudden painful jabbing that may otherwise occur.

The aspirating needle should be long and of large calibre.

Thick pus especially if it contains fibrinous flakes requires a large calibre needle. The point should be dull and short to avoid puncture or pricking of the visceral pleura on insertion or as the lung strikes against it during respiration. An ordinary spinal puncture needle or a small trocar and cannula are good.

The insertion of a needle or trocar into the pleural cavity is best done slowly and with attention to the sense of touch which may indicate when the needle has reached and passed through the pleura, which offers a tougher resistance than the intercostal muscles.

The procedure outlined by the Empyema commission of Camp Lee for preliminary aspiration management of Empyema during the critical early period when pneumonia is present is the following:

"On suspicion of the presence of fluid in the chest in any case of acute respiratory tract infection, a diagnostic aspiration was made. If the effusion was large, a liter or more was withdrawn slowly by means of a Potain aspirator. The fluid was examined bacteriologically both by smear and culture. If, as was usually the case, the fluid was serofibrinous and contained hemolytic streptococci, the patient was kept on medical and expectant treatment according to the general plan as outlined in the section of this report that deals with the medical features of the question. A careful watch of the patient was maintained by repeated physical examinations, and as soon as there was evidence of a reaccumulation of fluid to any marked extent another aspiration was carried out. As a rule aspirations were made at intervals of from two to six days, and on an average about four aspirations were made on each patient. Usually by the time of the fourth aspiration a period of from two to three weeks had elapsed, the character of the exudate had changed from a thin, almost transparent, serofibrinous fluid to definite pus, the pneumonia had improved markedly, and the patient's general condition was incalculably better, as shown by a drop in rate of respiration and pulse, the disappearance of the cyanosis and acute air-hunger, and a fall of 2 or 3 degrees in the temperature. Occasionally it happened that aspirations were performed at intervals of only twenty-four hours when the fluid reaccumulated rapidly. In three cases (13%), operation was found to be unnecessary because of failure of the exudate to reappear after aspirations. One of these had only one aspiration, at which 600 cc of serofibrinous fluid, containing many streptococci, was withdrawn. The patient is now entirely well, and no difference can be made out between the two lungs on examination either with the usual physical methods or the roentgen ray." The cure of empyema by aspiration alone is unusual and not to be expected although numerous cases are recorded in which such a result was obtained. A few instances have been reported of recovery following a single aspiration and this in cases where bacteriological examination had revealed the streptococcus.

Failure to locate pus may mean that a localized collection is missed, or the amount is small perhaps with adhesions at the point selected and the needle may have entered the lung, or the needle may be too small for the passage of thick pus and fibrinous exudate. If there is a free flow of pus, too rapid excape with consequent cough or collapse or entrance of air to the cavity may be prevented by the sterile gloved thumb over the exit, or by connecting the needle with a vacuum bottle with valve control or by attaching a syringe to it. When therapeutic aspiration is to accompany thoracentesis simple syringe aspiration repeated as many times as desired with thumb occlusion of the needle when the syringe is detached may be carried out. Air may be excluded by quickly disconnecting the syringe during expiration and covering the needle exit with the thumb. Dakin's solution may be injected and reaspirated repeatedly at the end of each aspiration treatment.

Aspiration is indicated to verify a diagnosis of empyema or hydrothorax to determine the character of the fluid and to make bacteriological study. Therapeutic aspiration is indicated in early empyema, especially if influenzal type or in the presence of pneumonia. Its purpose is to keep down the intrapleural pressure, to prevent displacement of the heart and mediastinum and to prevent encapsulation of a compressed lung. If pus is thick and full of fibrin, or if the pus reaccumulates so rapidly that frequent aspirations are necessary, resort to a closed tube drainage system or to open thoracotomy may be necessary.

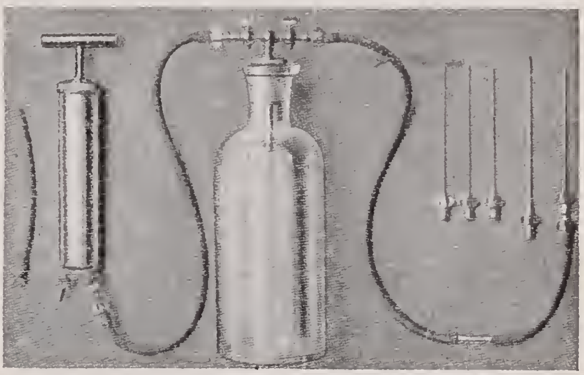
TECHNIC OF CLOSED DRAINAGE

Efforts to effect evacuation of pus from the pleural cavity by a technic that excluded air from the cavity were attempted some years ago. Earlier trials utilized a continuous flow method. Immerman in 1887 published in the *Deutsche medicinische Wochenschrift* a closed drainage method of treatment of empyema. He did not use repeated aspirations and irrigations through a catheter, but provided for continuous drainage with air excluded by terminating the drainage tube in a bottle containing thymol solution.

The technic of closed drainage method was mainly an outgrowth from experiences with empyema complicating influenza during the world war. Various authors at about the same time began to flood the literature with reports of this method from many army camps. Hugh McKenna reporting results at Camp Pike on a "new plan" says "To this type of operation I wish to direct especial attention; namely, the draining of the pleural cavity, irrespective of the character of the pus, by means of a No. 14 French rubber catheter, introduced by means of a trocar and cannula, just large enough to thread the catheter into the pleural cavity. The catheter is then connected with a 100 cc glass syringe, and aspiration is intelligently and carefully carried out. If the pus is too thick for aspiration, a small amount of neutral solution of chlorinated soda (Dakin's solution) is allowed to run in. This solution quickly liquifies the pus, so that by repetition of this procedure the entire cavity is emptied. The cannula is withdrawn, leaving the catheter in place, and one-half the number of cubic centimeters of Dakin's solution are allowed to run into and remain in the pleural cavity as correspond to the quantity of pus aspirated during the operation. The process of aspirating through this catheter and instillation of Dakin's solution is repeated by a trained ward surgeon three times a day, and two times during the night by an especially trained nurse. When by examination, either physical, by the roentgen ray or by aspiration, separate pockets of pus exist, this same procedure is followed. The last nineteen patients in this group have been treated by this method and I am firmly convinced that this plan of procedure is a marked improvement over any type of operation that has been performed in our experience at this camp."

The treatment of empyema by closed method as described by Dr. F. A. Manson of Worthington, Minn., is briefly the following:

A 7 mm trocar with cannula is introduced into the pleural cavity. The trocar is withdrawn, leaving the cannula in place until a 24 F. catheter with one terminal and two lateral openings, has been introduced. The pus is withdrawn with a 30 cc Luer syringe. Then from 20 to 50 cc of surgical solution of chlorinated soda are injected into the cavity and sucked in and out to dissolve the fibrinous masses. The cavity is then nearly filled with this solution, which remains for from ten to thirty-one minutes. The treatment is repeated from four to six times in the twenty-four hours, the frequency depending on the condition of the patient and the rapidity with which the pus accumulates. The tube remains clamped except when aspirating or injecting. All cases are controlled by laboratory count. When the discharge becomes sterile to culture and the cavity has diminished to a capacity of 15 or 20 cc the tube is withdrawn and the opening allowed to heal. Of forty-three patients treated by this method, all were cured; none had to have secondary operations.

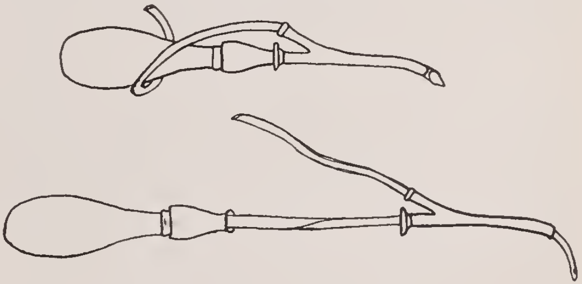


Outfit for Diagnostic and Therapeutic Aspiration.

The cardinal principles of the closed drainage methods are:

1. Avoid pneumothorax.
2. Aspirate at frequent intervals.
3. Irrigate with Dakins Solution.

To avoid pneumothorax either special instruments are used or care is observed to synchronize the time of opening the trocar or tube to connect and disconnect the aspirating syringe with the expiratory phase of respiration, and make the time of opening as brief as possible.



Dietrich's Trocar for Closed Thoracotomy.
Fig. 1—Ready for puncture.
Fig. 2—With obturator withdrawn after introduction into pleural cavity and with catheter inserted.
Note—a rubher cot is firmly fastened to the cannula and obturator handle so the technic is air tight.

A special trocar of the Dietrich type is convenient for this purpose. It has a main or direct lumen through which passes an obturator with pointed end suitable for penetration of the chest wall. The obturator is surrounded by a folded air-tight cuff (usually of rubber or fish-bladder) which is pneumatically sealed about the distal end of the trocar. The cuff is long enough to permit withdrawal of the obturator without tension on the cuff or releasing it. A lateral arm with a lumen of the same size connects with the main cannula at an acute angle. Through this the catheter or rubber tube drain is partially inserted and a similar pneumatic cuff converts this section into a non-air-leaking tube. The purpose of the instrument is to enable the obturator to be withdrawn under air tight conditions, sufficiently to permit the catheter to be threaded through the side tube into the main cannula and thence into the thoracic cavity. This trocar is curved near its proximal or penetrating end so that a valve like action may be effected by starting it opposite a rib and then causing it to describe an arc up over the superior border of the rib as the trocar enters the thoracic cavity.

A plain straight trocar of a diameter sufficient to admit a No. 16 catheter may serve as well. In this case avoidance of pneumothorax depends upon expeditious threading through of the catheter during an expiratory phase or while the pus is flowing through the cannula and intermittent clamping and releasing of the tube thereafter as aspirations are carried out.

The Operation: The necessary equipment for closed thoracotomy includes:

1. 2 per cent novacaine one ounce, syringe and needles (long) for thorough infiltration.

2. A trocar and obturator, the trocar should admit a previously selected catheter or rubber tube. The trocar may be size 12 to 16 F. for use in children or as large as size 24 F. in adults. The larger sizes are preferable if the intercostal spaces are wide enough to admit them.

3. The rubber catheter or tube must be previously tested for size suitable to the trocar. The length should be not less than 10 inches and the end that is to lie within the thoracic cavity should have multiple perforations. These perforations ought to be as large as may be made through the catheter without seriously weakening it.

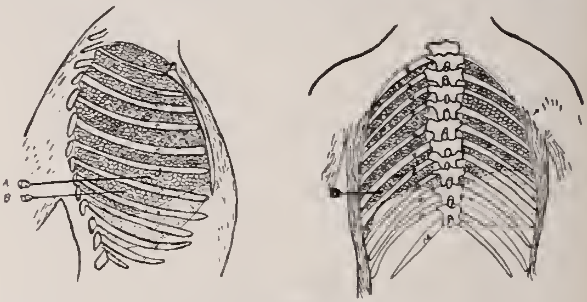
4. A twenty or thirty cc syringe.

5. One pint of Dakin's solution.

6. Adhesive tape—dressings, sterile sheets, towels, gowns, clamps, iodine, etc.

The Site: The same factors govern the selection of a site for closed drainage as for aspiration or open thoracotomy. The opening must be made of course wherever the pus is found. In massive empyema it will be usually in the seventh to ninth interspace in the mid-axillary to posterior axillary line. Due regard should be given to the lower intercostal artery which is larger than the upper one and therefor the penetration will be nearer the upper than the lower border of a rib.

The anaesthetic will require a little larger area of infiltration than for aspiration. The needle should be long enough to reach the pleura as that is the most sensitive tissue beside the skin. Thirty cc of novacaine judiciously placed through all layers of the injection site is sufficient. A better anaesthesia is secured by waiting ten minutes before the trocar is inserted.



SITE FOR ASPIRATION

Anterior and mid-axillary line 6th to 7th interspace.
7th to 8th interspace in post-axillary line. Should be not less than 4 inches from spine.

Inserting the trocar. The skin is nicked over the lower border of a rib and the trocar is made to penetrate the skin at that place. It is then pushed through an arc to the upper border of the rib where it is pushed directly into the pleural cavity. The sensation of sudden release of resistance and of the end of the trocar turning free in a cavity is generally distinct and unmistakeable evidence that the pleural space has been entered. The obturator is then withdrawn in the case of the Dietrich trocar to the branch through which the catheter is to be passed. The catheter is then advanced well into the chest cavity. None of the lateral perforations are to be permitted to be external to the pleura. Yet the perforations in the tube should be not so placed as to require too great length of tube in the pleural cavity.

The trocar is then withdrawn leaving the catheter in the desired position. The catheter is clamped off at the beginning of the operation and is never released thereafter except when attached to a syringe or special suction apparatus. Although a catheter or tube thus introduced is quite firmly gripped by the tissues, rendering its chance of slipping into the pleural cavity unlikely or of being prematurely with-drawn, the tube must be firmly fixed to the chest wall either by adhesive plaster or by a stitch. The loss of a tube in the pleural cavity is a disaster difficult to remedy.

The pus or a part of it is then aspirated, the cavity irrigated with Dakins solution and the tube clamped off. Less bulky dressing is needed than for open thoracotomy since the dressings will not be soiled. Both tube and clamps must be supported in the dressings in such manner as to obviate traction on them.

REPEATED ASPIRATIONS AND IRRIGATIONS IN CLOSED DRAINAGE METHOD:

The success of the closed drainage method of treating empyema depends mainly on the thoroughness with which the aspirating and irrigating technice is carried out. Those who oppose this form of management do so generally on the grounds that the attention to detail is too exacting. However, the requirements are those of persistency rather than of special skill. Aspirations and irrigations at first must be at frequent intervals. The Empyema commission at Camp Lee states: "On suspicion of the presence of fluid in the chest in any case of acute respiratory tract infection, a diagnostic aspiration was made. If the effusion was large, a liter or more was withdrawn slowly by means of a Potain aspirator. The fluid was examined bacteriologically both by smear and culture. If, as was usually the case, the fluid was serofibrinous and contained hemolytic streptococci, the patient was kept on medical and expectant treatment. A careful watch of the patient was maintained by repeated physical examinations, and as soon as there was evidence of a reaccumulation of fluid to any marked extent another aspiration was carried out. As a rule, aspirations were made at intervals of from two to six days, and on an average about four aspirations were made on each patient. Usually by the time of the fourth aspiration a period of from two to three weeks had elapsed, the character of the exudate had changed from a thin, almost transparent, sero-fibrinous fluid to definite pus, the pneumonia had improved markedly, and the patient's general condition was incalculably better, as shown by a drop in rate of respiration and pulse, the disappearance of the cyanosis and acute air-hunger, and a fall of 2 or 3 degrees in the temperature. Occasionally it happened that aspirations were performed at intervals of only twenty-four hours when the fluid reaccumulated rapidly. In three cases (13 per cent) operation was found to be unnecessary because of failure of the exudate to reappear after aspiration. One of these had only one aspiration, at which 600 cc of serofibrinous fluid, containing many streptococci were withdrawn. The patient is now entirely well, and no difference can be made out between the two lungs on examination either with the usual physical methods or the roentgen ray." The cure of empyema by aspiration alone is unusual and not to be expected although numerous cases are recorded in which such a result was obtained. A few instances have been reported of recovery following a single aspiration and this in cases where bacteriological examination had revealed the streptococcus.

The aspiration may at times be hindered by large flakes or patches of fibrinous exudate. The tube may be repeatedly obstructed. If so, the lumen may be opend and furthr aspiration possible after Dakin's Solution is injected. If a nurse is in charge of aspirations she should note and record the amount of pus aspirated and also the amount of Dakin's solution injected and returned. The maximum amount of Dakin's solution to be injected at one time is two hundred cc. Ordinarily a quantity equal to about one-half of the estimated size of the cavity is injected.

Sterile gown and gloves should be worn by the operator. It is needed for his own protection as well as to avoid introduction of other varieties of infection. The connection of the syringe and release of the clamp should succeed each other with special care never to have the tube open. It must be constantly either clamped off or connected with a syringe, and neither disconnected unless the other is attached. This observance will naturally obviate entrance of air to the pleural cavity.

Among advocates of the uses of an occlusion drainage system in empyema is Ransohoff. His views are expressed in the conclusions to an article in which he reported the results of management of empyema in the Cincinnati General hospital.

1. Empyema complicating influenza is in itself not responsible for death; too early operative measures should be avoided and should be limited to simple aspiration.

2. Operation not earlier than the end of the second week gives the best results. Rib resection is indicated only when sufficient space is not at command without it.

3. General anesthesia is not necessary in most cases, but in our experience does not increase the mortality rate of the operation.

4. The old methods of drainage should be given up for some type of the occlusion method, by

which the entrance of air into the pleural cavity is prevented and the egress of pus facilitated. A suction apparatus attached to the tube is deemed unnecessary.

5. Flushing of the cavity with Dakin or other solution is unnecessary except when defervesence does not occur, which indicates that spontaneous sterilization of the cavity is not progressing normally.

6. The small pneumothorax which sometimes remains after the healing of a cavity, as has been demonstrated by the roentgen ray, is negligible, since it disappears spontaneously in a short time.

Closed drainage finds its greatest application in those septic cases in which, early in a pneumonia, the presence of the fluid itself is considered a menace to the patient. It is here used to bridge over the critical period until the pneumonia has subsided and adhesions have formed. A secondary drainage operation may be performed later. Closed drainage is also invaluable in cases with a double empyema and in patients with a pnipneumothorax.

THE PROGNOSIS OF TIME IN THE REPAIR OF FRACTURES

ROBT. D. SCHROCK, M. D.,
Omaha, Nebr.

Constantly the doctor treating a fracture case is confronted by the patient with the questions: "How long will it take the bone to heal? How long must the splint be worn? How long before the arm or leg can be used? Will it be as good as before the accident?" Experience teaches the doctor a finesse comparable to none in evading a direct answer. He may have learned in deep chagrin the folly of attempting to out guess Dame Nature and her complicated processes of repair in the individual cases. The average medical man can and does gladly give opinions as to time and ultimate function to be gained, basing his replies on general averages as gleaned from text books, pertinent literature and his own personal experience. The greater his experience becomes, this same doctor becomes more guarded in his prognosis as to time of recovery and as to the degree of recovery. He recognizes more fully the great variation between the individual case and the average of a collection of cases. The careful doctor will analyze the condition of the patient at hand, the factors general and local which make for a recovery more rapid or more retarded than the average.

In addition to this analytical attitude toward the lesion itself, consideration will be given to the patient as an individual possessing mental capacity to understand and partially appreciate the particular problem which he presents for solution and I believe the average patient is appreciative of this attitude on the part of the doctor. It tends to bring better cooperation from the patient. There is removed from the situation much of the mystery of the human machine and its processes of repair. It makes for less indefinitness and hence greater peace of mind for both patient and doctor.

The average patient can understand the visual evidence of fracture as shown in the radiograms. With this as a working basis, the many factors influencing recovery favorably or unfavorably can more easily be described. These descriptions make less misunderstanding between the doctor and patient. They are educational in their purpose.

The more minute and exact scientific details of bone growth and repair cannot be given because they are as yet not definitely known. The process of bone formation appears to be closely allied with the intricate reactions of colloidal chemistry and that influenced or activated by the unanalyzable vital element. Information to date shows the blood clot becoming organized by the fibroblasts, and this loosely organized and fairly vascular new connective tissue normally being replaced or transformed by the osteoblasts into new bone. The source of the versatile fibroblast and its ultimate end is in dispute. The most virile osteoblasts supposedly arise from the inner layer of periosteum. Similar but less active bone forming cells come from the endosteum of the medullary and Haversian canals. These cells in themselves do not carry bone forming salts but influence in some way, the deposition of these salts from the blood. Normally in four to five months, self respecting bone is formed similar in quality to the structure to be repaired. The natural sequence of events may be interrupted at any stage; the new connective tissue frame work may become avascular firm fibrous tissue and remain so—eventually forming a pseudarthrosis even to the development of an endothelial synovial membrane. Union may stop at the cartilage stage; union may advance even to the early bony union stage; and then for no explainable cause, an invasion of destructive osteoclasts may produce disappearance of the newly formed bone, with a reversion to the union of fibrous type. Vital chemico-histology will have these puzzles to unravel.

Vital processes are most active and more normal when well supplied with proper food, fresh air, light, and coupled with a proper balance between rest and work. In bone regeneration the food supply must come from the arterial circulation; venous stasis invariably gives rise to bone atrophy or absorption. Clinically sunlight is a stimulus locally, although applied to remote portions of the body. Pigmentation of the skin is a measure and proof of the dosages received. The artificial lights are not yet in my opinion a satisfactory substitute.

The proper balance between rest and exercise in the treatment of fractures is yet to be determined. For the first seven to ten days after reduction of the fracture, rest is imperative. This does not exclude motion of the part but it does exclude painful motion; motion which produces pain and tends to produce loss of apposition or alignment of the fragments is not permissible. Fixation adequate to retain position of the reduced fracture should give rest and opportunity for gradually increasing activity of the surrounding muscles.

In children and adolescents, bone growth is notably rapid. As the osseous system reaches its full development reparative bone growth slows up appreciably. Repair in the senile is the rule but longer time can be expected. Age is so closely allied with general physical condition, that the apparent physical age of the patient should be considered rather than the actual years since birth.

The individual bone injured is a variant in the time of repair. The ulna possesses a fair blood supply both by nutrient arteries and periosteal capillaries in its proximal two-thirds, its lower one-third is poorly supplied. The fibula has a comparable nutrient artery supply but a far more generous periosteal supply. Union in the fibula is far more rapid than in the ulna. Non union in the ulna is not infrequent; in the fibula it rarely occurs.

The site of the fracture is a factor in the rapidity of bone repair, particularly as it bears relation to injury to one or more of the major nutrient vessels. The tibia in its upper and mid third presents a nutrient artery of major size, and when this is torn, blood must be supplied by the remaining periosteal vessels or time required for repair of the nutrient artery before much new bone can be developed. Transverse or oblique fractures at this site are very slow in repair.

Fractures result from direct or indirect violence. The damage is to both bone and soft parts, and bears distinct relation to the degree of the violence. In fractures by indirect violence, the bone fragments become an instrument of destruction to soft parts. The larger blood vessels are occasionally so severely damaged as to interrupt the blood supply to the distal segments of the extremity resulting in necessary amputation. Repair of the circulation must be made before repair of bone can be anticipated.

It is well established that trophic nerve fibers to bone exist. These nerves are naturally distributed to the periphery through the mixed nerve trunks. Trophic nerve fibers are less resistant to injury than are the motor or sensory fibers. The exact role played by these nerves is not known. The prevailing opinion is that their control is chiefly to the blood vessel wall. They may play a part in the direction of the chemico-histologic process of repair.

The type of fracture has an influence on the rapidity of repair. Linear and transverse fractures are, in spite of anatomic reduction, slower in their repair than are the moderately comminuted. The complete disruption of the periosteal bridge is brought forward as the explanation for this clinical fact. The outpouring of osteoblasts is apparently insufficient for the task at hand.

The earlier the reduction and final fixation of a fracture the earlier will repair begin. Repeated manipulations, even though carefully done, delay the beginning of repair; for at each manipulation necessarily the new vascular connective tissue frame work is torn down and must be rebuilt. Manipulations at ten days to two weeks after the injury are especially dangerous; that being the stage at which organization of the clot is becoming definite and bone salts are beginning to be laid down. Each manipulation makes of the injury, a fresh fracture and the repair period must be computed from that date. Pressures gradually applied will, during the first three weeks, produce slow bending or giving of the newly forming callus without injury to its nutrition and resultant delay in consolidation.

The method of reduction is by manipulation and traction or by open operation. The average open operation delays healing, due to further damage to soft parts and particularly to periosteum. The introduction of foreign bodies such as metal plates, bone plates, nails or screws, retards materially the normal processes of bone repair. the less foreign material, the less inhibition to normal repair.

Modern medicine is becoming more a science and less of an art. The refinements of the x-ray technic are bringing the reduction of fractures to the scientific basis. Where modern transportation can make x-rays immediately available, exact diagnosis of the fracture is essential before efforts are made at reduction. Fleuroscopic examination during the efforts at reduction is modern technic. When fixation is applied, a check up picture is necessary as a permanent tangible record. Failure to obtain and retain this visible record makes many a medico-legal tangle most serious.

However, in the use of this invisible and potent active ray, there lies danger of excess dosage. Deeply penetrating rays inhibit or destroy activity of growth, notably in tissue of the embryonal type. The fibro blasts and the osteoblasts possess embryonal characteristics; their activity early may be retarded. Frequently repeated x-ray examinations we believe inhibit early bone growth. In those cases arrested at the fibrous union stage, experimental work suggests deep therapy in stimulating doses as a therapeutic measure. This dose must produce only a mild hyperemia in the deep tissues. In the hands of those other than careful and expert technicians I believe this therapeutic method requires further study.

Following the reduction of a fracture, the means of fixation occupies the stage. The choice of traction methods, splinting methods, etc., is necessarily determined by the material available and the doctor's particular ability to adapt that material to his purpose. The best classification of fixation methods is (1) adequate and (2) inadequate.

The efficiency is more in the workman than in the tools. Adequate fixation demands relative comfort of the patient, rest to the injured extremity and immobility at the site of fracture. Local ischaemia or venous stasis of the distal part are naturally to be avoided. Fixation must be continued until union has occurred. Too early removal of fixation apparatus is the major cause of late deformities and a great factor in so-called non-union.

MANAGEMENT OF THE SERIOUSLY SICK CHILD*

W. O. COLBURN, M. D.,
Lincoln, Nebr.

Progress in the past quarter of a century has been greatest in the mechanical and electrical fields, so great in fact that one is scarcely startled by any new developments announced from day to day.

In the limited field of medicine known as Pediatrics great progress has been made in a reduced mortality rate. In 1926 this rate for cities of the United States in the Birth and Death registration areas was 73.7 per 1000 born. In 1927 the rate was 64.9, a reduction of nearly 9 points. In our own city of Lincoln the rate was 64 in 1926 and 55 in 1927.

The advances in all branches of medicine are so varied and so many that one cannot begin to use all the offerings even in a limited practice. However, one cannot refuse to progress because of such a condition.

Too frequently it is true that many of our practioneers treat all cases in the same manner, first and always a cathartic, and if not immediately better, then more catharsis.

Simplicity and perfection should travel together, but not this type of simplicity deserves any such reward.

Illustrative of too much catharsis are the following brief case reports.

Case 4712. Jan. 17, 1928. Female, age 9 months.

Normal birth, mother died when baby was one week old. The baby was referred because of

(1) Paralysis of the lower extremities.

(2) Indigestion and much mucus in stools.

(3) Marked recent loss in weight.

Attempts had been made by the local physician to correct the feeding, but for some weeks frequent divided doses of calomel followed by castor oil were given.

Regulation of feeding, withdrawal of cathartics and baby left the hospital in 9 days, cured.

Diagnosis: Peripheral neuritis, with pseudo paralysis, due to mercury poisoning.

Case 5249. Nov. 21, 1928. Female, age 5 months.

Breast fed, well nourished baby. Onset sudden 2½ days ago with distention and crying out with pain. Blood and mucus appeared quickly in the stools. Vomited frequently the first 24 hours. No apparent signs of upper respiratory disease. The physician in charge had given many doses of castor oil and enemas with no results, he stated.

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*Read before the Lancaster County Medical Society, March 19, 1929.

Examination: Temperature 105.2, abdomen fairly soft and quite easily palpable. Rectal examination disclosed a large indurated mass of the bowel. "The intussuspiens" was very close to the anal orifice, in fact, could be seen to protrude slightly upon withdrawal of the examining finger, dark purple, almost black in appearance. The baby was moved to a hospital and a surgeon called. The baby expired on operating table before an incision could be made.

We all sometime or other fall and fall hard. We often fail in taking careful histories or do not make a complete thorough examination. No doubt all of us frequently neglect to get a specimen of urine, especially from an infant. I could describe many such cases and they happen in our own group. The following case was observed by three physicians before being referred to our clinic, the third physician examined the urine, finding sugar and suspected a diagnosis of diabetes. Briefly the case report follows:

Case No. 5352. Jan. 4, 1929. Female, age 19 months.

Nothing of interest in early history except solid foods were fed after being masticated by her parents. Recently began taking cows milk. Past six weeks drank volumes of water and voided large amounts of urine. Great loss of weight and progressively weaker. Past two days slept most of the time, in a comatose state. Urine showed sugar 3 plus. Blood sugars were then run, ranging from 360 mgm. to 100 cc whole blood on admission to the hospital to 80 mgm to 100 cc blood on discharge from hospital. Insulin and calculated carbohydrate diets were used. The baby left the hospital in three weeks with a normal blood sugar and a gain of 3 pounds.

Many vomiting cases, likewise diarrhoeal cases, or both conditions associated, may result in a profound acidosis due to dehydration. Many such cases are treated with cathartics and often fluids withheld. Such treatment continued brings the inevitable "death". We have resorted to intraperitoneal infusions in many of these cases and blood transfusions in others. The following two cases showed immediate response to these therapeutic methods.

Case No. 1219. Feb. 25, 1927. Female, age 2 years.

Today is the third day of vomiting and the second day of diarrhoea. Laxatives had been given early by the physician. No symptoms of upper respiratory infection.

Diagnosis: Acidosis.

Treatment: Patient moved to hospital and 700 cc Ringer's solution was given by intraperitoneal infusion. The recovery was prompt and the patient was permitted to go home the following day.

Case No. 5038. Aug. 1, 1928. Male, age 4 years.

Early history unimportant except he had hemorrhage of newborn, and had a convulsion on the 4th day of life.

Present illness: Three days ago had a high temperature and a convulsion of 20 minutes duration. Vomiting was a frequent symptom the past three days and with offensive odor the past 24 hours.

Examination: Very restless, rolling in bed, in semicomatose condition; very pale and undernourished. Cheyne-Stokes respiration. Acetone breath, lips cherry red, scaphoid abdomen, all reflexes normal. Diarrhoea, many watery stools.

Treatment: 250 cc citrated whole blood was given intraperitoneal. Child left hospital in eight days, well.

In upper respiratory infections, especially in the infant, occasionally there is an associated diarrhoea. This latter symptom consists of many, copious watery stools, and fails to respond to the usual dietary changes that idiopathic diarrhoeas react to. Many infants with these symptoms run a very high temperature and a high white cell count. There may be little or no findings in the external auditory canal, yet in the face of these symptoms one is justified in having the mastoid antrums uncapped, and rewarded by an almost immediate cessation of the diarrhoea, and a sudden drop of temperature to normal. I could report a number of very excellent results by resorting to this surgical procedure, likewise I could report a number of autopsies showing this condition which had been undiagnosed.

Case 4262. Jan. 27, 1928. Female, age 10 months.

Vomiting and diarrhoea started 4 days ago. No vomiting now, but diarrhoea continues with 10 to 15 very watery stools daily.

Temperature was high from the beginning, is 103.5 today. The throat is very red; right ear shows a red Shrapnell's membrane. Next day the temperature was 105.2, diarrhoea continuing. Baby was sent to the hospital and a double antrotomy was performed. Temperature dropped to normal within 12 hours. After one or two elevations of temperature recovery took place.

Erysipelas is a very serious disease in infancy and while we have an almost specific serum to use and I commend its use, sometimes the expense is prohibitory and again it may be quite inconvenient as to time and place. The following method is in use at Cook County hospital and is easily administered to the little patient. Paint the area involved with 2% mercurochrome twice daily and in addition give 20 cc whole citrated blood from an adult, preferably one of the parents. Inject the blood into the buttocks or interscapular area. Repeat every 3rd or 4th day. The blood furnishes antibodies, nutrition, and stimulation of the spleen.

The erysipelas is temporarily abated about 24 hours after the injection, which wanes after 2 or 3 days and then another 20 cc of blood should be given.

Case 4939. May 27, 1928. Female, age 2 years.

Breast fed 1st year, well nourished infant. No previous illness.

Present illness—Temperature daily for past three or four days, higher at times and some delirium.

May 31—Cervical adenitis, temperature 103.5.

June 2—Temperature 104.

June 3—Temperature 102.2. Erysipelas of face. 15 cc fathers blood was given intramuscularly.

June 4th—Temperature 102.2. 20 cc grandmothers blood was given intramuscularly.

June 5th—Temperature 102.2.

June 8th—Temperature 103. 20 cc grandmothers blood was given intramuscularly. Rapid decline of temperature and face cleared up.

CONCLUSION

In diseases of children it has always been a valid excuse that these little patients cannot tell you their troubles, therefore, it has been easy to formulate a system of treatment applicable to all patients.

In the light of the present knowledge in pediatrics, it should be possible to arrive at a fairly accurate diagnosis, and suitable specific or amendable treatment instituted. Every seriously sick infant or child should be entitled to a careful examination, which should include a urine analysis, a blood picture, an ear examination, and in many cases an x-ray investigation.

The pediatric patient offers more hope of recovery than the adult and the physician that anchors to the old saying "as long as there is life, there is hope" is very often rewarded for his unfailing efforts.

TYPES OF EPILEPSY IN CHILDREN*

E. W. HANCOCK, M. D.,
Lincoln, Nebr.

My title requires a word of explanation, as, of course, there is but one type of true epilepsy, the idiopathic, all others being symptomatic. I do not wish to discuss the various forms in which idiopathic epilepsy presents itself, neither do I intend to even mention all the possible causes of symptomatic epilepsy. I wish merely to bring to your attention a few rather definite clinical pictures of children who are seen with a history of periodic or recurring convulsive seizures, and who are often labeled epilepsy without any qualifying term. I also have a few cases to illustrate these various types.

First is the true or idiopathic type. These children are usually well nourished, of healthy appearance, active and fairly intelligent. Closer observation shows stigmata, both physical and mental, which are rarely absent. The physical signs are fairly familiar—deformities of the head, malformation of the ears, strabismus, epicathus, assymetries of the extremities, etc. The mental stigmata are even more striking. Abnormal emotional responses, lack of self-control, extreme curiosity, lack of moral sense, talkativeness, etc. In other words, the epileptic is rarely a normal individual, although at first glance he may appear to be. The family history, the age and mode of onset and the typical character of the attacks usually have little room for doubt as to the diagnosis. A rather typical history runs as follows:

J. P., female, five years old. Normal birth and infancy. Attacks started at age of four with petit mal attacks, several daily, gradually increasing in severity, so that she is now having one grand mal attack daily. Eats well but is constipated. One maternal uncle was epileptic. Child is well nourished, two pounds overweight but fat is evenly distributed. Ears are poorly formed and epicanthus is present. The girl is extremely active, alert, even precocious. Parents say she is very difficult to control. Urine, blood count and Wassermann all negative. Skull x-ray entirely negative, including sinuses. Diagnosis idiopathic epilepsy. Recommendation, ketogenic diet.

I do not desire to discuss treatment, except incidentally, but this is the type, and the only one, which responds to the ketogenic diet. This method deserves much consideration as it is the most hopeful development in the treatment of epilepsy since the introduction of luminal. I might also say that the alertness which is so often noted quickly disappears under prolonged bromide treatment and the advisability of continuous bromide administration constitutes the chief point of difference between pediatrists and neurologists.

The next most common type presents an entirely different picture. I refer to the child with a toxic epilepsy, secondary to infection. This sort of child is usually poorly nourished; has large infected tonsils, possibly sinuses; generalized adenopathy, particularly cervical; extreme nervousness and instability, but without any abnormal mental traits; chronic fatigue; in short, all the phenomena which result from focal infection and chronic malnutrition.

A. P., 7½ years old with a negative family and birth history, has had grand mal attacks since the age of four, at intervals of six to eight weeks. Most attacks were preceded by malaise vomiting, and fever, which lasted until after the attack. Tires easily and has pains in legs. Eats and sleeps very poorly. Examination shows a child 15% underweight, large infected tonsils and past nasal discharge, large cervical glands, soft systolic murmur; transmitted to axilla, slight enlargement of cardiac area, bow legs and flat feet, positive Chvostek. Urine shows a 1+ albumen and 8-10 pus cells, blood count and Wassermann negative, Diagnosis, epilepsy, probably symptomatic, infected tonsils, old rickets, with possibly latent tetany, early rheumatic endocarditis. Following tonsillectomy and treatment directed to malnutrition, attacks ceased and have not recurred in two years.

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*Read before the Lancaster County Medical Society, October 2, 1928.

Very close to this type comes that much debated child, the so-called spasmophilic. By this I do not mean frank tetany, but the older child who gets a convulsion on the slightest provocation, from a slight infection, worms, eating green fruit, etc. By some this condition is called latent tetany, based on the Chvostek, which is usually positive, and the electrical reactions, which are abnormal, but rarely to the same degree as a true tetany. Blood calcium and phosporus determinations which might throw some light on the question have not been done in many large series. Others consider these cases as true epilepsy, which they very evidently are not. About all we can say at present is that some children are extremely liable to convulsions, that the prognosis is good, the attacks ceasing at puberty, and that the cause is unknown.

Another interesting group of cases are the endocrine disturbances. It is said that hyperthyroidism is a frequent cause of epileptiform attacks though I have never seen such a case. We do see pituitary disturbances associated with epilepsy. These children usually present the typical Frohlich's syndrome of obesity with girdle masses of fat, mental sluggishness, low metabolic rate, often polyuria.

Such a child was P. L., a boy of 11½ years, who has had monthly grand mal attacks for the past year. He is apparently in perfect health otherwise. His family and birth history are entirely negative. He is sixteen pounds overweight with a heavy pelvic girdle of fat. The genitals are small, but breasts are overdeveloped. He is somewhat sluggish mentally. He complains of polyuria, voiding large amounts of urine at frequent intervals. The first twenty-four hour specimen measured 4,000 cc. His blood count and Wassermann were negative. X-ray of the skull showed a very small sella turcica with close approximation of the clinoid processes. He was given a six weeks' course of pituitrin injections, with whole pituitary by mouth. His weight decreased to almost normal, urine decreased to 1000 cc daily and his whole appearance changed. Convulsions became less severe and were controlled by ¼ gr. luminal daily. During the past year he has had two attacks.

An interesting subject for speculation is the question of circulatory disturbances as a cause of epilepsy.

A case in point is that of B. B., a boy seven years old, who has had nocturnal grand mal attacks for past year. He has a congenital heart lesion, probably an inter-ventricular septum, without cyanosis. Attacks follow unusual activity and ceased almost entirely on a rest regime. The heart lesion in this boy may be incidental, but the response to rest alone was so marked that one must consider the circulatory phase.

The last type I wish to discuss is the so-called organic epilepsy, due to pathological brain changes. There are two main groups; those due to birth injury or congenital brain defect, which are practically indistinguishable, and those due to encephalitis. The birth injury type is only too familiar to all of us, usually appearing as a cerebral palsy, or Little's disease. The two phases of this disease, the mental and the paralytic are present in all possible proportions, but usually a certain degree of both can be recognized. I presume it is possible to have an epilepsy as the only result of a birth injury, but the diagnosis would surely be doubtful. Encephalitis, on the other hand, may have no residue except the convulsions, accompanied, usually by mental changes which are very similar to those found in ordinary epileptics. The resemblance is so striking and the difference so often one only of degree that the question frequently comes up in a given case, whether the epileptic syndrome may not be due to an unrecognized encephalitis. The important reason for attempting to recognize the organic epilepsies is that the prognosis is distinctly bad and treatment of any kind, particularly the ketogenic diet, is not likely to give good results.

CLINICAL SIGNIFICANCE OF CARDIAC ASTHMA

In a group of 250 patients with cardiac asthma discovered in the past few years among 3,100 private and hospital patients with organic heart disease (8 per cent), and analyzed by Robert S. Palmer and Paul D. White, Boston (*Journal A. M. A.*, Feb. 9, 1929), 180 were males and seventy females, and all but fourteen were over 40 years of age. The grave prognostic significance of the condition is shown by the fact that 170 of the 250 patients are known to have died, with an average duration of life of 1.4 years after the first attack of cardiac asthma. The largest number of cases, 187, was found in the group of patients with coronary disease, hypertension, or both (10.7 per cent of this etiologic group), but the highest relative incidence occurred in syphilitic heart disease (21 per cent) and in chronic nephritis (19 per cent). Left ventricular failure due to any one or a combination of several factors appears responsible for cardiac asthma, but the exact mechanism is not clear. The frequency, duration and severity of the attacks altered the prognosis appreciably only when of extreme degree. The coincidence of poor heart sounds, gallop rhythm and pulsus alternans indicated, as a rule, a very short life. Aortic regurgitation, usually of syphilitic origin, was the only common valve defect (sixty-three cases of the 250). In therapy, digitalis and rest were generally effective in reducing the number of attacks and apparently in prolonging life; for the treatment of acute attacks nitrites and alcohol were sometimes helpful, but morphine was of the greatest value.

MINUTES OF HOUSE OF DELEGATES AND COUNCILOR MEETINGS NEBRASKA STATE MEDICAL ASSOCIATION ANNUAL MEETING, OMAHA, MAY 14-16, 1929

HOUSE OF DELEGATES: FIRST SESSION.

Elk's Club, Omaha, Nebraska, Tuesday, May 14. 1929, 12:30 p. m.

The House of Delegates was called to order by President-elect, Dr. F. S. Owen. Roll call by Secretary Adams showed 49 members present.

Then followed the regular order of business.

Motion made that since the minutes of the 1928 meeting had been published that the reading of them be dispensed with. Seconded and carried.

Nominees for the office of president pro tem were called for.

Dr. Jos. Bixby was nominated for president pro tem.

Motion made that the nominations be closed and the secretary be authorized to cast the unanimous ballot for Dr. Bixby as president pro tem. Seconded and carried.

Report of the Council was called for.

Motion made that since the report of the Council for 1928 had been published that the reading of it be dispensed with and that it be adopted. Seconded and carried.

Report of the Committee on Journal and Publications was called for.

Dr. Long read the report.

Motion made that the report of this committee be accepted and referred to the Council. Seconded and carried.

The Insurance Committee report was called for.

Dr. Selby read his report.

Motion made that this report be accepted and referred to the Council. Seconded and carried.

Report of the Committee on Medico-Legal Defense was called for.

Dr. Fouts said his report had been published and that he had nothing further to report.

Secretary-treasurer's report was called for.

Dr. Adams said his report had been published and that he had nothing further to report.

Motion made that the Secretary-treasurer's report be adopted. Seconded and carried.

The Program Committee's report had been made to the Council.

The Report of the Committee on the Cost of Medical Care was read by Dr. Adams.

Motion made that this report be accepted and referred to the Council advising the continuance of the committee. Seconded and carried.

Report of the Committee on Public Policy and Legislation was called for. Dr. Bailey read his report.

Motion made that the report be accepted and referred to the Council. Seconded and carried.

Dr. Overgaard read the necrology list for 1928-29. The members remained standing while this list was read.

Motion made that a page be set aside in the Journal as a memorial page for our past presidents and also a page for the other doctors who were members of the Association. Seconded and carried.

Dr. Koebbe gave a short discussion concerning the lack of interest in the County Medical Societies regarding the meeting and suggested an amendment to the constitution.

Amendment to Section 3, Article 8, of the Constitution of the Nebraska State Medical Association:

> "Except that the Councilors shall be elected by a majority vote of the delegates present from their Councilor District at the meeting of the House of Delegates on the morning of the last day of the general session."

Report of the Campaign Committee was called for.

Dr. Hohlen read his report.

Motion made that this report be adopted and referred to the Council. Seconded and carried.

Dr. Overgaard read a resolution denouncing the "Food Fads".

Motion made that the resolution be referred to the Council for their advice. Seconded and carried.

The Committee on Nominations was chosen as follows: Drs. Francis Heagey, Geo. Covey, F. W. Buckley, Lucien Stark, W. E. Wright, J. E. Meisenbach, Jos. Bixby, F. A. Burnham, P. A. Sundbury, C. F. Heider, A. L. Cooper.

Motion made to adjourn until 12:30, Wednesday, May 15, 1929. Seconded and carried.

HOUSE OF DELEGATES: SECOND SESSION.

Elk's Club, Omaha, Nebraska, Wednesday, May 15, 1929, 12:30 p. m.

Meeting was called to order by Dr. Bixby. Roll call by Secretary Adams, showed 30 members present.

Motion made that Dr. E. O. Weber be seated to act as delegate of the Saunders County Medical Society. Seconded and carried.

Motion made that Dr. Don Steenburg be seated to act as delegate of the Hamilton County Society. Seconded and carried.

The minutes of the first session were read by Dr. Adams. These were approved as read.

The minutes of the First Councilor meeting were read by Dr. Adams, and approved as read.

Dr. Fordyce read a resolution sent in by Dr. F. B. Young.

Motion made that this resolution be referred to the Council with the instructions that it be very thoroughly studied. Seconded and carried.

Motion made to adjourn until 8 o'clock, Thursday morning, May 16, 1929. Seconded and carried.

HOUSE OF DELEGATES: THIRD SESSION.

Elk's Club, Omaha, Nebraska, May 16, 1929, 8 a. m.

The meeting was called to order by President F. S. Owen. Roll call by Secretary Adams showed 49 members present.

The minutes of the second session of the House of Delegates were read by Dr. Adams and approved as read.

The minutes of the second Councilor meeting were read by Dr. Adams.

A motion was made by Dr. Overgaard that Dr. C. A. Hull's name be substituted for Dr. R. W. Fouts as a member of the Defense Committee. Seconded and carried.

A motion was made that the minutes of the second Councilor meeting be received and adopted. Seconded and carried.

Report of the Nominating Committee was called for by the chair.

Dr. Heagey read the report of the Nominating committee as follows:

For President: Dr. K. S. J. Hohlen, Lincoln; Dr. Hal Smith, Franklin; and Dr. F. W. Plehn, Scottsbluff.

For Vice Presidents: Dr. Jos. Bixby, Geneva, and Dr. A. L. Cooper, Scottsbluff.

Delegate to A. M. A.: Dr. B. F. Bailey, Lincoln.

Alternate Delegate to A. M. A.: Dr. C. P. Fordyce, Falls City.

Delegate to Council on Medical Education: Dr. J. Stanley Welch, Lincoln.

Public Activities Committee: Dr. J. Stanley Welch, Lincoln.

Publication Committee: Dr. B. F. Bailey, Lincoln.
Councilors: 9th District, Dr. R. D. Bryson, Callaway.
11th District, Dr. C. A. Selby, North Platte.
12th District, A. L. Cooper, Scottsbluff.
10th District, Dr. L. W. Rork, Hastings.

Respectfully submitted,
Jos. Bixby, Chairman,
F. W. Heagey, Secretary.

A motion was made that this report be adopted. Seconded and carried.

The House then proceeded to the election of officers.

Drs. C. P. Fordyce and C. A. Selby were appointed as tellers

The House of Delegates proceeded to ballot for the three nominees for president.

Dr. Hohlen received 44 votes, Dr. Smith 4 votes and Dr. Plehn 1 vote.

Dr. Hohlen having received the majority of votes, was elected president.

A motion was made that the secretary be instructed to cast the unanimous ballot for the two vice presidents named in the Nominating Committee report. Seconded and carried.

The secretary cast the unanimous ballot of the House of Delegates for Drs. Jos. Bixby and A. L. Cooper for vice presidents.

Further nominations for Delegate to the A. M. A. were called for. Dr. A. D. Dunn was nominated from the floor.

The House of Delegates proceded to ballot for the Delegate to the A. M. A.

Dr. Bailey received 30 votes and Dr. Dunn 20.

Dr. Bailey having received the majority of votes, was elected Delegate to the A. M .A.

A motion was made that the secretary cast the unanimous ballot for Dr. C. P. Fordyce as Alternate Delegate. Seconded and carried.

The secretary cast the unanimous ballot of the House of Delegates for Dr. Fordyce as Alternate Delegate.

Further nominations for Delegate to Council on Medical Education were called for and Dr. J. J. Keegan was nominated from the floor. Dr. Keegan's name was later withdrawn.

A motion was made that the secretary cast the unanimous ballot for Dr. J. Stanley Welch as Delegate to Council on Medical Education. Seconded and carried.

The secretary cast the unanimous ballot for the House of Delegates for Dr. Welch as Delegate to Council on Medical Education.

A motion was made that the secretary cast the unanimous ballot for Dr. J. Stanley Welch as member of the Public Activities Committee. Seconded and carried.

The secretary cast the unanimous ballot for the House of Delegates for Dr. Welch as a member of the Public Activities Committee.

A motion was made that the secretary cast the unanimous ballot for Dr. B. F. Bailey as a member of the Publication Committee. Seconded and carried.

A motion was made that the secretary cast the unanimous ballot for the House of Delegates for Dr. R. D. Bryson as Councilor of the 9th District. Seconded and carried.

The secretary cast the unanimous ballot for the House of Delegates for Dr. Bryson as Councilor of the 9th District.

A motion was made that the secretary cast the unanimous ballot for the House of Delegates for Dr. C. A. Selby as Councilor of the 11th District. Seconded and carried.

The secretary cast the unanimous ballot for the House of Delegates for Dr. Selby as Councilor of the 11th District.

A motion was made that the secretary cast the unanimous ballot of the House of Delegates for Dr. A. L. Cooper as Councilor of the 12th District. Seconded and carried.

The secretary cast the unanimous ballot of the House of Delegates for Dr. Cooper as Councilor of the 12th District.

A motion was made the secretary cast the unanimous ballot for the House of Delegates for Dr. L. W Rork as Councilor of the 10th District. Seconded and carried.

The secretary cast the unanimous ballot for the House of Delegates for Dr. Rork as Councilor of the 10th District.

A motion was made that the privilege of the floor be granted to Dr. Lucien Stark. Seconded and carried.

Dr. Stark proposed an amendment to the constitution. As Chapter V, Section 2, now stands, the Nominating Committee must bring in the names of three men for the office of President-elect. Dr. Stark proposed changing this to read that the Nominating Committee should bring in not more than three names.

Dr. Hohlen was called before the House and welcomed by Dr. Potter. He gave a short talk in response.

The next order of business was choosing the place for the meeting next year. An invitation from the Lincoln Chamber of Commerce was announced.

A motion was made to accept the invitation of the Lincoln Chamber of Commerce to have the meeting there next year. Seconded and carried.

A motion was made that a vote of sincere thanks be extended to Omaha for their courteous and splendid treatment of the Nebraska State Medical Association during the meeting.

This motion was amended to read: and that we highly appreciate the hospitality extended by the Elk's Club. Seconded and carried.

Drs. Potter and Stark were appointed to introduce Dr. Hohlen to the general session.

A motion was made to adjourn. Seconded and carried.

COUNCILOR MEETING: FIRST SESSION.

Elk's Club, Omaha, Nebraska, May 14, 1929, 2 p. m.

The meeting was called to order by President Frank Tornholm. Members present were: Drs. Lehnhoff, Cook, Selby, Rork, Bryson, Overgaard, Potter, Tornholm, Nielsen, Fordyce.

A motion was made that the reports of the committee read at the January meeting of the Council be adopted. Seconded and carried.

A motion was made that the report of the Committee on Public Policy and Legislation be returned to Dr. Bailey for completion and then that it be adopted and published. Seconded and carried.

A motion was made that the Campaign Committee report be placed on file. Seconded and carried.

A motion was made that we recommend to the House of Delegates that the Committee on the Cost of Medical Care be continued and that the Committee be complimented on their work. Seconded and carried.

A motion was made that the Journal Committee report be accepted and placed on file. Seconded and carried.

A motion was made that the Insurance Committee report be accepted and published and a recommendation made to the House of Delegates that each Councilor urge every County Medical Society to ask the U. S. F. & G. Company to send a representative of the Company to their society to explain this insurance policy. Seconded and carried.

Miss Clarke, of the National Food Bureau of Chicago, explained the resolution they wanted passed against "Food Fads."

A motion was made that we recommend to the

House of Delegates the adoption of the following resolution as corrected, against "food fads":

A. P. Overgaard, Sec. Board of Councilors.

RESOLUTION PASSED BY NEBRASKA STATE MEDICAL ASSOCIATION

We, the members of the Nebraska State Medical Association, go on record decrying the fads which prevail in our land today, and especially the food fads which tend to foist on the public high-priced patented foods, which are often misrepresented by their elaborate methods of advertising. The substitution of these highly priced, patented foods not only very often has become a detriment to the health of the consumer, but also has become the source for an alarming economic condition, due to the great decrease in the consumption of wheat, meat, and other products of the farm.

Very few of these fads can take the place of the older staple foods, namely, good meat, dairy products, green vegetables, fruits and the better grades of bread prepared from white flour. The present day indiscriminate substitution of an excess of rough foods, such as flours containing bran, and the irritating vegetables, is producing a great deal of unnecessary discomfort and chronic dyspepsia, and has reached proportions of a distinct health menace. The similar tendency to eliminate animal proteins from the diet may also become a menace to the public health.

(1) Any balanced diet should contain some animal protein, fruits, vegetables, especially the leafy vegetables, for their vitamin and mineral salt content, digestible fat, such as butter fat, and sufficient easily digestible corbohydrates to afford readily available energy.

(2) Carbohydrates, including sugars and starches, but especially starches, furnish the American public its main fuel for energy, the quantity varying with the amount of physical activities which the individual expends. Much of the starch should be supplied by the most available and easily digestible foodstuffs, of which whole grain stuff is the best example, as bread, if baked sufficiently to break up the raw starch granules.

(3) Starch furnished by too rough a diet may not only have a cathartic action, due to irritation, but also the starch granules are so covered by a cellulose envelope as to prevent their availability to the action of the digestive juices.

The allegation that white bread, meat or any other staple food, when employed in mixed diet, is responsible for certain grave illnesses is not supported by scientific facts.

(4) The leafy vegetables contain considerable amounts of refuse non-irritating to the digestive tract, which are therefore very valuable to promote good elimination.

We desire, in the public interest, to place on record that, in our opinion:

1. The exaggerated claims for various fad foods are entirely unwarranted by scientific evidence or practical experience, and the advertising and other propaganda furthering their substitution for the older articles of diet should be condemned.
2. The danger of nutritional deficiencies has been grossly exaggerated. No one food is a perfect food: but a diet consisting of dairy products (especially milk), leafy vegetables, fruits, meats, and easily digested starches for heat and energy, furnishes an excess of all food factors necessary for proper growth and nutrition, and resistance to disease.
3. Any variation from a normal common sense diet should be prescribed by a properly trained advisor only after a careful study of the dietary requirement of the individual seeking advice.

Adopted at Omaha, Nebraska, this 15th day of May, 1929.

Seconded and carried.

Meeting adjourned until 2 o'clock, May 15th.

COUNCILOR MEETING: SECOND SESSION.

Elk's Club, Omaha, Nebraska, May 15, 1929, 2 p. m.

Meeting was called to order by President Frank Tornholm. Those present were: Drs. Fordyce, Rork, Cook, Potter, Nielsen, Douglas, Overgaard, Tornholm, Selby, Bryson, McGrath.

A motion was made that we turn the resolution as offered by Dr. Young to the House of Delegates over to the delegates to the A. M. A. and ask them to make a report at the January meeting. Seconded and carried.

A motion was made that we recommend appropriations for the year 1930 to the House of Delegates as follows:

Journal Fund—$1.25 per member.
Defense Fund—$2.00 per member.
Salary—Chairman Defense Committee—$600.00.
Salary—Secretary-Treasurer—$600.00.
Councilor Expense—$360.00.
Expense—Office Secretary-Treasurer—$800.00.
Reporter for Meeting—$150.00.
Campaign Committee—$500.00.
Public Activities Committee—$1,500.00.
President's expense—$100.00.
Salary—Chairman Public Act. Committee—$1,000.00.
Expense—Legislative Committee—$100.00.
Program Talent, Expense of Delegates to A. M. A. and Councilor on Medical Education—$500.00.

A motion was made that the secretary be instructed to use the necessary amount of money for the printing of the new constitutions. Seconded and carried.

Dr. C. A. Hull was nominated as a member of the Medico-Legal Defense Committee.

A motion was made that the nominations be closed and that the secretary cast the unanimous ballot of the Council for Dr. Hull as a member of the Medico-Legal Defense Committee. Seconded and carried.

The secretary cast the unanimous ballot of the Council for Dr. C. A. Hull as a member of the Medico-Legal Defense Committee.

Dr. L. W. Rork spoke on the matter of the difficulties existing between insurance companies and the profession and made the motion that a committee of three—one surgeon, one general practitioner, and one x-ray man—be appointed to confer with the committee from the insurance companies to iron out the difficulties between the insurance companies and the physicians.

An amendment to this motion was made that the matter be left to the judgment of the Legislative Committee. Seconded and carried.

A motion was made that the Councilor's meeting in January be held in Lincoln. Seconded and carried.

A motion was made to adjourn. Seconded and carried.

A. P. Overgaard, Sec. Board of Councilors.

HOUSE OF DELEGATES—ROLL CALL

Adams—G. L. Pinney	p	p	p
Boone—J. E. Davis	p	a	p
F. M. Barnes	a	a	a
Box Butte—H. A. Copsey	a	a	a
Buffalo			
Burt—L. Morrow	p	a	a
M. Wood	a	a	a
Butler—J. H. Downing	a	a	a
C. E. Beede	a	a	a
Cass—O. E. Liston	p	a	a
R. R. Westover	a	p	a
Cedar-Dakota-Dixon-Thurston-Wayne—			
John Buis	p	a	p
N. L. Hansen	a	a	a

Cheyenne—G. F. Zarbaugh	a	a	a
F. P. Sucgang	a	a	a
Chase-Dundy-Hayes-Hitchcock—J. F. Prener	p	a	a
Clay—W. M. Thomas	a	a	a
C. W. Keith	a	a	a
Colfax—W. J. Kavan	p	a	a
Charles D. Eby	a	a	a
Cuming—H. W. Francis	a	a	p
C. A. Pierson	a	a	a
Custer—F. A. Burnham	p	a	p
Dawson			
Dodge—Andrew Harvey	p	p	p
Guy Seward	a	a	a
Fillmore—Joe Bixby	p	p	p
Franklin—R. B. Campbell	a	a	a
H. C. Smith	a	a	a
Furnas—W. C. Miller	p	a	a
Gage—F. W. Buckley	a	a	p
J. C. Tucker	a	a	a
Hall—E. E. Farnsworth	p	a	p
W. J. Raynor	a	a	a
Hamilton—Don Steenburg	a	a	a
Harlan—J. N. Campbell	a	a	a
A. J. Gardner	a	a	a
Holt & Northwest—F. L. Wilson	a	a	a
J. P. Brown	a	a	a
Howard—M. O. Arnold	p	p	p
R. T. Jones	a	a	a
Jefferson			
Johnson—G. J. Rubleman	a	p	p
A. P. Fitzsimmons	a	a	a
Kearney			
Keith-Perkins—F. M. Bell	a	p	p
Kimball			
Lancaster—Geo. W. Covey	p	a	p
J. J. Hompes	a	a	a
H. E. Flansburg	a	a	a
A. D. Munger	p	p	a
J. E. M. Thomson	p	a	p
B. F. Williams	a	a	a
Lincoln—C. F. Heider	p	a	p
T. J. Kerr	a	a	a
Madison-Stanton-Antelope-Pierce-Knox—A. M. Sonneland	p	a	p
L. Stark	a	a	a
R. A. Frary	p	p	p
John Reid	a	a	a
E. E. McClelland	a	a	a
Graham	a	a	a
W. Benthock	p	a	p
F. G. Salter	a	a	a
A. J. Schwedehelm	a	a	a
C. R. Green	a	a	a
Merrick			
Nance—Homer Davis	p	p	p
Nemaha—I. W. Irvin	a	a	a
B. F. Lorance	a	a	a
Nuckolls			
Omaha-Douglas—Fred Wearne	a	a	p
Russell Best	p	a	a
R. W. Fouts	p	p	p
F. O. Beck	a	a	a
C. C. Tomlinson	p	p	p
W. D. Sucha	a	a	a
C. T. Uren	p	p	p
Chas. Moon	a	a	a
F. W. Heagey	p	p	p
Chas. M. Swab	a	a	a
R. D. Schrock	p	a	a
J. W. Duncan	a	a	a
J. R. Kleyla	p	a	p
F. W. Wearne	a	a	p
Otoe—D. D. Stonecypher	a	a	a
T. L. Weeks	a	a	a
Pawnee—E. L. McCrea	a	a	a
J. F. Prendergast	a	a	a
Phelps—P. A. Sundbury	p	p	p
Guy Clark	a	a	a
Platte—E. E. Koebbe	p	p	a
Polk—J. C. Malster	p	a	p
Red Willow—W. D. Machnecknie	a	a	a
J. M. Willis	a	a	a
Richardson—G. W. Egermayer	p	a	p
Wm. Shepherd	a	a	a
Saline			
Saunders—E. O. Weber	a	p	p
Scottsbluff—A. L. Cooper	p	p	p
F. B. Young	a	a	a
Seward—J. E. Meisenbach	p	a	a
Joe Morrow	a	a	a
Thayer—C. C. Snowden	a	a	a
J. G. W. Westerhoff	p	a	p
Valley			
Washington—R. J. Murdock	p	a	a
W. E. Wright	a	a	p
Webster—R. S. Martin	a	p	p
York—F. S. Morris	a	a	a
D. D. King	a	a	a

COUNCILORS

A. P. Overgaard	p	p	p
H. J. Lehnhoff	p	a	p
C. P. Fordyce	a	p	p
A. E. Cook	p	p	p
Morris Nielsen	p	p	p
Frank Tornholm	p	p	p
H. E. Potter	p	p	p
W. J. Douglas	a	p	a
R. D. Bryson	p	a	p
L. W. Rork	p	p	p
C. A. Selby	p	a	p
F. W. Plehn	a	a	a

OFFICERS

President—F. S. Owen	p	a	p
Vice Presidents—W. R. Boyer	a	a	a
E. L. Brush	a	a	a
Secretary-Treasurer—R. B. Adams	p	p	p

EX-PRESIDENTS

M. L. Hildreth	a	a	a
J. E. Summers	a	a	a
W. O. Bridges	a	a	a
A. R. Mitchell	a	a	a
H. M. McClanahan	a	a	a
A. E. Jonas	a	a	a
F. A. Long	p	p	p
Harold Gifford	a	a	a
L. M. Shaw	a	a	a
P. H. Salter	a	a	a
J. P. Lord	a	a	a
I. N. Pickett	a	a	a
J. P. Gilligan	a	a	p
E. W. Rowe	a	a	a
M. F. Milroy	a	a	a
C. L. Mullins	a	a	a
H. W. Orr	a	a	a
M. S. Moore	a	a	a
B. B. Davis	a	a	a
B. F. Bailey	p	p	p
Morris Nielsen	p	p	p
Palmer Findley	a	a	a
H. J. Lehnhoff	p	a	p
H. E. Potter	p	p	p
B. R. McGrath	a	p	p

REPORT OF THE COMMITTEE ON JOURNAL AND PUBLICATION

During the year 1928 The Nebraska State Medical Journal published 480 pages of reading matter, 114 original articles from 94 authors, and 87 editorials.

While the Journal publishes almost all the material offered by the profession of the state as representing a cross section of the professional average and while some of the articles may lack in scientific worth, it is thought by the publication board, that it is worth while to encourage Nebraska physicians to write. It must be noticeable to all who carefully read the Journal that in scientific worth the general average of the articles published from year to year is getting higher. Editorials from the Journal, both signed and unsigned ones are being republished by other state journals and by the bulletins of the American Medical Association devoted to special phases of organizational work, frequently, which can only mean that the Journal has something that appeals to others.

The publication board and the editor are constantly striving to improve the Journal in scientific worth, and in mechanical and artistic appearance and to this end suggestions from the profession are solicited and welcomed.

The report of the Journal fund as audited by the council in January and published in the March Journal need not here be given in detail. Suffice it to recall that the total receipts for 1928 were $7,453.16, of which $5,245.77 was from advertising, and that the total cost of publishing the Journal was $6,905.70 and that the Journal Fund has invested January 1st, 1929, $6,010.76. It is not thought desirable to increase the investments. The committee on Journal and Publication, therefore, has decided to ask the Association for $1.25 per member for the ensuing year, a reduction of 25 cents from the amount received the last two years and of 50 cents from the amount received for some years previous to that time.

F. A. Long, Chairman.

REPORT OF INSURANCE COMMITTEE OF THE NEBRASKA STATE MEDICAL ASSOCIATION

To the President, Officers, members of the Assembly of the House of Delegates of the Nebraska State Medical Association in annual session, May 14, 1929.

Group insurance which has been in force and available to the members of the Nebraska State Association since October, 1927, master policy of which has since that date been deposited with the Secretary of the State Association by the United States Fidelity and Guaranty Company of Baltimore, Maryland, has had gradual steady growth with a net gain of about sixty policies during 1929, as above those which were in force at the end of 1928.

Your insurance committee has kept in touch with the insurance situation as relates to the United States Fidelity and Guaranty Company and find that during the entire period of the group policy to May 1st, 1929, the following information:

Suits Filed still in court on which no settlement is contemplated—9.

Suits Filed on which settlement has been made—5.

Counter Claims successfully defended—4.

Claims filed on which we have denied liability, no suit having been filed—3.

Above report, we believe, to be quite enviable.

Your committee also desires to direct your attention to the fact that the issuance of group insurance has greatly reduced the cost of mal-practice insurance for the entire medical profession of the State of Nebraska, as well as has it also had a tendency to create keen competition amongst insurance companies with the result that increased coverage and decreased reservations in the content of every policy of whatever nature issued in the State of Nebraska for mal-practice coverage.

Your committee feels that they have presented exceptional opportunity to the members of the State Association to avail themselves of this insurance by our repeated reports to the House of Delegates and to the several letters which were sent to the members of the State Association through the secretary of the association, and by the maintainance by the insurance company of a sales force who sell this particular insurance exclusively, also the presence of an exhibit annually at the meeting place of the State Association during its convention, which arrives us at the conclusion that the present committee has served its purpose with the exception of keeping a liaison between the insuror and the insured, leaving entirely the sales proposition between the insuring company and the individual member of the State Association.

The United States Fidelity and Guaranty Company have made overtures to your committee for the privilege of furnishing speakers for the various councilor district meetings which may occur during the ensuing year and are desirous of carrying their program direct to the doctors throughout the State and we beg to hereby recommend that such offers be accepted and that the councilors of the various district be so advised.

It is the opinion of your committee that by the end of the next current year the membership of the State Medical Association may be made to realize the wisdom of this advancing protection and that the membership will take a keener interest in their membership renewals in order to avail themselves of this extraordinary protection.

Respectfully submitted,
C. A. Selby, Chairman,
Morris Nielsen,
Robert D. Schrock,
R. B. Adams, Sec'y,
Committee.

(Report of Legislative Committee next month).

MEDICAL PRESCRIPTIONS OF ALCOHOL

The Bureau of Prohibition of the Treasury Department has just made available statistics regarding the use of intoxicating liquors under official auspices in the United States. The pamphlet concerned provides statements pertaining to the amounts of various types of alcoholic liquors produced and used at various times previous to and since the passing of the eighteenth amendment, as well as full information concerning arrests, seizures and other activities of the Prohibition Department. During 1928, 68,951 physicians used prescription books as contrasted with 48,097 in 1927. The number of licensed physicians in those states which permit the use of liquor for medicinal purposes is 116,756, so that a little more than one-half the total number of physicians permitted to prescribe alcoholic liquors avail themselves of the opportunity. During 1927, 14,948 physicians used one book during the year; 8,743 used two books; 10,861 used three books and 13,545 used four books. Apparently, therefore, slightly more than 10 per cent of all the physicians who might prescribe alcoholic liquors used the total number of prescriptions afforded them by the government. The total number of prescriptions issued during the year increased from more than eight million in 1922 to approximately thirteen and a half million in 1925 and then decreased to less than twelve million in 1927. July 1, 1927, there were outstanding 94,958 permits for physicians, dentists and veterinarians to prescribe and use intoxicating liquor. During the year 16,906 new permits were issued, 10,405 were canceled, surrendered or expired, and 407 permits were revoked. At the close of the year, therefore, the number of outstanding permits of this kind had increased to 101,052. These figures are offered without comment in order that the medical profession may have some conception of the status of medical prescription of alcoholic liquors. —Jour. A. M. A., March 30, 1929.

In Memoriam

Those we call dead are just away,
Have left us for a little day,
Have wandered to another land
That we know not, nor understand
But it must be exceeding fair
Because so long they linger there.
But soon - ah soon - will come the day
When all of us will go away
To join the ones whom we call dead
Who've wandered onward just ahead
Then shall we know - then shall we see
The glorious land of "Yet To Be."
Then shall we meet those gone before
And live with them forevermore.

Alexander S. v Mansfelde - Died - June 17, 1928
President Nebraska State Medical Society, 1893-94

John Monro Banister - Died - Jan. 31, 1929
President Nebraska State Medical Association, 1919-20

Armenag B. Tashjean - - Died - - - - - May 27, 1928
T. J. Dwyer - - - - - - - Died - - - - - - May 29, 1928
E. Willard Powell - - - - Died - - - - - June 5, 1928
Isaiah Lukens - - - - - Died - - - - - - June 18, 1928
Geo. M. White - - - - - - Died - - - - - July 28, 1928
S. A. VanOsdel - - - - - Died - - - - - - Dec. 3, 1928
H. E. Funk - - - - - - - Died - - - - - Dec. 5, 1928
Louis A. Dermody - - - Died - - - - - - Mar. 21, 1929
John B. Ralph - - - - - - Died - - - - - Mar. 29, 1929

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ROSTER OF OFFICERS

Dr. B. R. McGrath, Grand Island, President	1929
Dr. Frank S. Owen, Omaha, President-Elect	1930
Dr. E. L. Brush, Norfolk, Vice President	1929
Dr. W. R. Boyer, Pawnee City, Vice President	1929
Dr. R. B. Adams, Lincoln, Secretary-Treasurer	1930

COUNCILORS

Dr. R. D. Bryson, Calloway	1929
Dr. L. W. Rork, Hastings	1929
Dr. C. A. Selby, North Platte	1929
Dr. F. W. Plehn, Scottsbluff	1929
Dr. A. P. Overgaard, Omaha, Secretary	1930
Dr. H. J. Lehnhoff, Lincoln	1930
Dr. C. P. Fordyce, Falls City	1930
Dr. A. E. Cook, Randolph	1930
Dr. Morris Nielsen, Blair	1931
Dr. W. J. Douglas, Atkinson	1931
Dr. Frank Tornholm, Wahoo, Chairman	1931
Dr. H. E. Potter, Fairbury	1931

DELEGATES TO A. M. A.

Dr. A. D. Dunn, Omaha	1929
Dr. R. W. Fouts, Omaha	1930

DELEGATE, COUNCIL ON MEDICAL EDUCATION, A. M. A.

Dr. J. S. Welch, Lincoln	1929

MEDICO-LEGAL DEFENSE COMMITTEE

Dr. Roy W. Fouts, Omaha, Chairman	1929
Dr. C. A. Hull, Omaha	1930
Dr. R. B. Adams, Lincoln, Secretary	1930

Note: In case of suit notify secretary at once.

LIABILITY OF COUNTIES FOR MEDICAL AND SURGICAL SERVICE TO PAUPERS

An interesting contribution to medical jurisprudence that means much to the medical profession in Nebraska is the Supreme Court decision in the case of John W. Neslund, Appellee, vs. the County of Dawson, Appellant.

Briefly stated, Dr. John W. Neslund, a practitioner at Cozad was called upon to minister to Neal Bevard, a schoolboy who had sustained a complicated fracture of both bones of the leg on the school playground. His parents were indigent, although the father was able bodied. The doctor communicated with a member of the county board asking that the county assume the expense of his care which was refused. The boy required medical, surgical and hospital care which the doctor provided. Frequently after the date of the accident the doctor requested a member of the board to grant authority to give medical and surgical attention to the injured boy which was in each instance refused.

After the boy's recovery, suit was instituted by the doctor against Dawson county and the jury gave a verdict for the doctor. The case was therefore appealed to the Supreme Court, and the lower court was upheld.

In rendering a decision the Court cited Section 5153 of the Compiled Statutes which provides that whenever any person, not coming within the definition of pauper, shall be unable to pay his nursing and medical aid, it shall be the duty of the county board to furnish such assistance to such person as it shall deem necessary . . . continuing, "This does not mean that the board may arbitrarily avoid liability by a heartless disregard of the most obvious necessities of suffering humanity."

Quoting from former decisions the court said epigrammatically: "The service of a surgeon or physician cannot be required as a matter of charity.'' "In a case of emergency the physician may hold the district liable although he acted without the request or the consent of the person designated by the statute as overseer of the poor. In a proper case it seems the physician may hold the district liable . . . even in the face of his actual refusal of consent, if lawfully or arbitrarily withheld."

"Neither the county commissioners . . . nor the town supervisors . . . can turn their backs upon the proper claim of the poor person." "Nor can it be said that the unfortunate pauper who has met with an accident requiring instant succor is to be remediless; the county or the town must provide for him as soon as they may."

The decision makes it clear that a poor man who is without funds, property or credit, is a ward of the county, not of the doctors.

THE WORK OF THE PUBLIC ACTIVITIES COMMITTEE

When the Nebraska State Medical Association a few years ago created a public activities committee, something original in medical organization was done; when the personnel of the committee was chosen as it stands today under the chairmanship of Dr. E. R. Hays, a living, functioning body, resulted. The aim of the public activities committee is to carry the message of modern medicine to the masses in an unobtrusive manner.

The health activities at the State Fair under the direction of this committee are treated in another article. Other activities are health teaching at the four state normal schools and at the university.

The present article is concerned only with the work accomplished during the week of the annual meeting in Omaha and known as Health Week.

Twenty-five talks were given to an many different organizations, including several Parent-Teacher's associations; Y. M. C. A.; Y. W. C. A; several High Schools; regional schools; clubs—Lions, Triangle. Cooperative, Rotary, Concord, Engineers, Pro tem, Executive, Kiwanis, Continental, Jewish Community, College; Chamber of Commerce; Bar Association. The range of talks can be seen from the following:

"Home and Health," "Teeth, Tonsils and Posture," "Tuberculosis," "How to Maintain Good Health," "Prevention of Contagious Diseases," "Reasonableness of Modern Medicine," "Cost of Sickness," "Diabetes," "The Prevention of Disease in Children," "School Health," "Preventable Diseases," "Purpose of Health Week," "Working for Dear Life," "The Purpose of School Health Education," "Fresh Air, Food and Sleep," "Blood Pressure," "A Case of Non-Sequitor," "Optimum Health is Obtainable," "Facing the Forties," "Sore Feet," "Your Doctor and Mine," "X-Ray as it Concerns Health," "What the Community Owes to its Children," "Health Inventories," "Overweight," "Keeping Fit," "Health is a Partnership," "Good Health and Mental Ability," "The Nervous Child," "Influenza and Its Sequels."

The wide range of subjects in a manner implies the value of these talks. Several thousand people of the thinking classes were reached by these messages and untold good was accomplished. By a continuance and still broader development of this work will organized medicine carry the message of modern medicine to the people.

HEALTH ACTIVITIES AT THE STATE FAIR

The Nebraska State Fair Board has arranged for all Health Activities of the State Fair to be under the supervision and direction of the Nebraska State Medical Association. This organization will direct through its Public Activities Committee, of which Dr. E. R. Hays, of Falls City, is chairman. His official capacity will be that of Superintendent of State Fair Health Activities.

Under this new arrangement the emergency hospital will be officered by the Lancaster County Medical Society. It will be re-located in the building formerly occupied by the Modern Woodmen of America.

The Health Examining work for men, women and babies will be under the supervision of Dr. Keegan, Dean of the University of Nebraska College of Medicine, Omaha, Nebraska. A corps of doctors selected from the members of the Nebraska State Medical Association will assist Dr. Keegan and his staff with these examinations.

The health exhibits, lectures, and demonstrations will be supervised by Dr. Schulte, Dean of the Creighton Medical College, Omaha, Nebraska.

The old quarters are being re-constructed according to modern medical ideas with clinical and x-ray laboratories. In this clinic it will be possible to more scientifically examine the babies, conduct health examinations, inspect 4-H Club boys and girls, and in general coordinate and intensify health teaching. Many health organizations will cooperate in this work, including the state health department, the medical colleges, county medical societies, Nebraska Tuberculosis association, Red Cross, Medical Department of the United States Army, city and school visiting nurses, Y. M. C. A., Boy Scouts and Camp Fire girls, and others.

The Nebraska State Fair has grown to enormous proportions. It now contacts with several hundred thousand people each year. Their health is of paramount importance, and it is hoped that this effort on the part of the Nebraska State Medical Association will have a constructive teaching force of very great value.

—J. S. Welch, Lincoln.

POTASSIUM PERMANGANATE IN THE TREATMENT OF PNEUMONIA

In the May issue of the *Annals of Internal Medicine*, published by The American College of Physicians, Dr. John L. Chester of Detroit, Mich., reports on a series of cases in which he has had very satisfactory results through the employment of Potassium Permanganate. Using a standard solution,—two grains of the permanganate to one and one-half pints of warm sterile water, injected rectally by means of a funnel and catheter, the patient lying on his left side, and with the intention of the fluid being retained. The dosage was from 3 to 5 ounces, given every 3 or 4 hours, for a period of from 8 to 10 days.

At Providence Hospital, Detroit, Dr. Chester's initial exposition of the drug was on 23 cases of lobar and broncho pneumonia. He claims the death rate was exceptionally low—there were but two deaths. His observations lead him to declare that respiration, temperature, and pulse rate consistently became normal in from 36 to 72 hours, and that convalescence was more rapid and less exhaustive than is usually observed under similar conditions treated by more orthodox methods. At Eloise Hospital, maintained by the local poor commission, 20 severe cases were selected at random. Ten of these were treated by other than the Potassium Permanganate, and all died. The remaining ten were given varying doses of the solution, and 50 per cent of them went on to surprising recovery. These patients were all of the homeless, indigent type, most of them were admittedly chronic alcoholics, and nearly all had heart complications of long standing. Their vitality and powers of resistance had been reduced to the lowest ebb. Practically 100 per cent mortality had been the rule under similar conditions in the past by other methods of treatment. Dr. Chester considers the Eloise cases the acid test.

There is apparently no record of the exposition of this treatment in American medical literature. It is an English importation. In 1924, it was first used in pneumonic conditions, the British Medical Journal of March 7th, 1925, and again on March 12th, 1927, containing reports on the work done by Drs. Nott and Roche. It is noteworthy to remark that the results obtained by Dr. Chester practically duplicate in success the earlier English results.

Not the least interesting part of Dr. Chester's paper, are his concise case histories and progress notes. In addition, he reviews the chemical action of the drug, explains the method of the preparation of the solution, and outlines the best modes of administration. He makes a plea for further investigation of the therapy by interested clinicians to the end that a directed verdict may be obtained whether or not the drug has proved specific action against the micro-organisms of pneumonia.

MEDICAL FEES IN COMPENSATION CASES

"Medical fee schedules, when adopted, should conform to the average charges for like work in the community. Where there is no official schedule and where the fee is in dispute, the commission should be empowered to decide the matter."

"Official fee schedules have now been adopted in fourteen states. This policy is one of slow growth, and its introduction doubtless depends largely on the influence of the organized profession in each state. Capable physicians cannot be expected to sell their services to compensation work for a smaller fee than they command in their private practices. The increased security of payment noted in the Texas law might justify a slight reduction in fee schedules for compensation cases, but this reduction should not be sufficient to destroy the interest of capable physicians and to attract only those of mediocre ability, or worse.

"If these principles are adhered to, few cases of disputed fees will arise in compensation work, and where such do arise the commission should be empowered to render final decision."

This from page 19, Special Report Number 31, Uniform Medical Provisions for Workmen's Compensation Acts in the United States, by the National Industrial Board, Inc.

If the Labor Commissioner of Nebraska would embrace this broadminded concept, the medical profession would have no complaint to make.

—Czar Johnson, Lincoln.

EDITORIAL PARAGRAPHS

Eight physicians lost their lives in the Cleveland Clinic disaster.

Arkansas has been added to the list of states having Basic Science laws.

The Association of Military Surgeons is called to meet at Denver Sept. 25.

A 3% solution of potassium permanganate is recommended as a cure for poison ivy.

But two colleges of Homeopathy remain in this country and but one Eclectic Medical college.

The Clinical Congress of the American College of Surgeons will be held in Chicago, October 14-16.

From Russia comes a report of treating deafness by giving the ears exercise in responding to sound.

The A. M. A. meeting at Portland, Oregon, July 8-12 promises to be one of the best ever held on the Pacific Coast.

The *J. A. M. A.* says a little more than half the total number of physicians permitted to prescribe alcoholic liquors avail themselves of the opportunity.

In the May Journal article, "The Annual Meeting Forty Years Ago," by inadvertance a name was given "Harvey Millard"; it should have read "Harvey Link, Millard." This for historic accuracy.

A new type of x-ray apparatus, completely insulated in oil and with all high voltage wires completely eliminated, and therefore shock proof has been announced with the installation of the first machine in New York City.

Further evidence that the department of welfare under the new head of the bureau of health is enforcing quarantine laws comes from a case in the upper Elkhorn valley where a physician was fined for releasing from quarantine before the specified period.

Essays will be received in competition for the Samuel D. Gross Prize of $1500, until January 1, 1930. This prize is awarded every five years to the writer of the best essay on some subject in Surgical Pathology or Surgical Practice founded on original investigation.

The Woman's auxiliaries to state medical associations are wrestling with the problem of what disposition to make of widowed members of the several auxiliaries. The Pennsylvania Auxiliary suggests they be retained as members as long as they remain doctor's widows. This seems sensible. No doctor's widow should be penalized because of the misfortune of widowhood.

Referring to a diagnosis of "intestinal flu" sometimes made by the younger and therefore (supposedly) better educated members of the profession a man of authority in the medical profession recently said: "For the laity this may mean a satisfactory diagnosis, but used by physicians it is commonly an acknowledgement of ignorance or uncertainty of the true nature of the illness." Let us hear no more about "intestinal flu."

It is announced that Dr. Sanford Gifford of Omaha is to become head of the department of ophthalmology of Northwestern University Medical School, Chicago. Every Nebraska physician will take pride in this recognition accorded an able son of a famous father. It may be safely assumed that it was not a greater opportunity to make money that decided Dr. Sanford to sever his connection with the firm that bears his honored father's name, but rather the greater opportunity to teach and do research work.

In less than 40 years the average height of Vassar students has increased nearly 2 inches. The increase in weight has been 7 pounds with a decreasing rate of increase. The average age of freshmen in 1921-1925 was eight-tenths of a year younger than in 1891-95. Notwithstanding change in costume, there has been an increase in girth of waist of only one inch. From 1896 the average number of sports engaged in has risen from 2 to 11, and the maximum number reported by any student from 8 to 22, says the U. S. Bureau of Education.

The Caduceus for 1929, volume one, a student publication of the University of Nebraska College of Medicine is off the press—and we like it. It is a work of art of a high order. It traces the history of the college from the organization of the Omaha Medical College in 1880, gives the pictures of the early faculty members as well as the present ones, gives page cuts of all the deans and small cuts of most of the students of the four classes in the college the past school year, student clubs, the nursing school, the library and various other activities in a comprehensive and dignified manner.

The Eleventh Decennial Convention for the Revision of the Pharmacopea of the United States of America is called to meet at Washington, D. C., May 13, 1930. "The members of the United States Pharmacopœial Convention, in addition to the Incorporators and their associates, shall be delegates elected by the following organizations in the manner they shall respectively provide: Incorporated Medical Colleges, and Medical Schools connected with Incorporated Colleges and Universities; Incorporated Colleges of Pharmacy, and Pharmaceutical Schools connected with Incorporated Universities; Incorporated State Medical Associations; Incorporated State Pharmaceutical Associations; the American Medical Association, the American Pharmaceutical Association, The American Chemical Society, the National Association of Retail Druggists, and the National Association of Boards of Pharmacy; provided that no such organization shall be entitled to representation unless it shall have been incorporated within and shall have been in continuous operation in the United States for at least five years before the time fixed for the decennial meeting of this corporation." "Delegates appointed by the Surgeon-General of the United States Army, the Surgeon General of the United States Navy, and the Surgeon-General of the United States Public Health Service, the Secretary of Agriculture, the Secretary of Commerce, the Association of Official Agricultural Chemists, the Association of American Dairy, Food and Drug Officials, the National Wholesale Druggists' Association, the National Dental Association, the American Drug Manufacturers' Association, the United States Division of Customs, and the University of Havana, and by the organizations not hereinbefore named which were admitted to representation in the Convention of 1900, shall also be members of the corporation. Each body and each branch of the United States Government above mentioned shall be entitled to send three delegates to the meetings of this corporation. But no such delegates as are provided for in this article shall be members until their credentials shall have been examined and acted upon as provided for by the By-Laws.

INSTALLATION OF THE PRESIDENT

Nebraska State Medical Association, Omaha, 2 p. m., May 14, 1929.

H. E. POTTER, M. D., Fairbury, presiding: Members of the Nebraska State Medical Association: This installation of our President today is an innovation with our State Association and is very much in keeping with the progress and advancement that our Association has made since its organization some sixty-one years ago.

We are proud of our medical pioneers. We are proud of our men who have made medical history for Nebraska. There are many of them. The gentleman I am now to present to you is one of the pioneers of Nebraska. He has stiven earnestly and diligently for the success and advancement of our Association. All of you know him. He needs no introduction to you, and yet I have been delegated to do the conventional at this time, and so it is with pride and with pleasure that I introduce to you Dr. Bailey, who will introduce our President.

B. F. BAILEY, M. D., Lincoln, Nebraska: Mr. Chairman and Members of the Nebraska State Medical Association: The gentleman whom I shall introduce came to this state in 1885. I came to this state in 1886. I came from the far east, and was told I could live but a year, and weighing one hundred twenty pounds. I liked Nebraska. I liked the outlook. It was so good I made up my mind I would not die, but would stay with it a while. It seemed to me this place must be like heaven, where they say there are no doctors. I did find a few—Drs. Gifford, Jonas, Aiken, and one whom I shall introduce today.

Through all these years I have watched these men stand shoulder to shoulder, striving for higher ideals in the medical profession. I have seen institutions that were a disgrace to the state wiped away, educational advantages advanced, and everything done in this state by the State Medical Association and by the acts of these men who began so well this work. I am proud wherever I go back in the old New England home to say I am from Nebraska. I am glad to tell them what has been done here. They do not all believe it, but they believe as much as we do about California—and more of it is true.

It is a great pleasure to introduce one who has done his very best to make for us the splendid medical standards which prevail in Nebraska today. It is a pleasure to present to you your President, Dr. F. S. Owen, of Omaha.

F. S. OWEN, M. D., President, Nebraska State Medical Association, Omaha, Nebr.: I feel it is fitting on this occasion that I again express my deep appreciation of the honor of being selected to serve as your president for the coming year—the greatest honor that can come to an individual from the members of the medical profession of his state.

When I view the list of names of worthy men who have preceded me in this office I hope I may be pardoned for the feeling of pride which I experience when I see my name added to the list. I may fail to live up to the traditions of my predecessors; I may fail to do all you expect of me; but I will not fail to do my best in carrying out the duties and obligations of the office.

When I look over the large assemblage gathered here today I am reminded of another state meeting which took place some years ago. Today our register shows there are over 400 present; the register of that occasion showed there were about thirty-six. The question at once comes to my mind: What influence has been at work to cause the marked increase in attendance? It cannot be accounted for by the natural increase in the number of physicians of the state, as they have not increased twelve fold as the comparative attendance of the two meetings might lead us to believe. Therefore, it must be due to a general awakening and increase of interest in medical matters that has taken place throughout the state. What has caused this awakening? My answer is, it is largely due to the organization and maintenance of our county medical societies. They, after all, are the basic units of medical activities of the state. Hence the more active and stronger the units are the better will our state organization the stronger will be our meetings. We have no complaint to make about our state meetings; we are proud of them. They stand well up in the front ranks of those of other states, but, should we not do better? If all the component county societies were relatively as active as the few, it would add immensely to the strength of our organization and this added strength would be reflected in our state meetings. Hence the amount of activity manifested in our various county societies becomes an important question to all of us. Therefore I feel it will not be out of place at this time for me to discuss briefly one or two of the underlying causes of the lack of activity that prevails in a considerable number of our counties.

I am told on good authority that 50% or less of our counties hold regular meetings, that the other 50% hold meetings very irregularly, if at all. Every county in the state, which has five or more qualified physicians, should have a living society which should hold its meetings at regularly appointed dates throughout the year.

We find living, active societies in most of our more densely populated counties, especially in those having cities and large towns, but in those having wider spaces and smaller towns we find the society spirit more often not so active, indeed in some instances apathetic.

The reasons for the weakness of many are due mainly to two causes. First, we find a few, fortunately only a few, which harbor politics within the ranks of their members. Politics and cliques have no place in a medical society. Their blighting influence will cause large societies to degenerate, and the smaller ones to wilt and die. Second, we find the cause in most societies is due to lack of sufficient incentive to interest and hold their membership. Hence, how to make it sufficient becomes the important question. The best way to meet this question, in my opinion, is for each society to devote itself to the development of its own members. To do this they must be put to work.

There are two pretty well defined classes of members. One prefers to sit and listen; the other prefers to stand and act. In the ranks of those who prefer to listen are put as good brains and qualifications as in the ranks of the active, but a natural reticence and timidity keep these attributes in the background. They may not volunteer to act but if invited to do so, you will be surprised how many of them will respond. Large societies usually have little trouble in filling their programs by calling for volunteers. With smaller societies this method too often meets with failure and other means must be invented. To this end I would recommend that the secretary of every society in the state not later than August should meet with the program committee of which he should also be a member, to make plans and formulate the programs for the ensuing year. For large societies a call for volunteers will doubtless suffice, but for small societies each member should be assigned a definite date when he is expected to appear with a paper, a case report or something of interest to the membership. Other plans will suggest themselves to the resourceful secretary, such as joint meetings with contiguous counties, social entertainments, etc., but that can safely be left to him and I feel that our meetings, large and small, will prove successful in every sense of the word.

A SUGGESTION TO COUNTY AUXILIARIES

Before your next meeting send to United States Bureau of Child Welfare, Washington, D. C., for a copy of the Sheppard-Towner Bill and get the reasons offered why it should be extended another five years and the benefits from it up to date. Then write to the American Medical Association, Chicago, for their reasons for opposing the Sheppard-Towner Bill and ask them what they have to offer to take the place of this educational bill.

The best way to bring this before your members will be with an old-fashioned debate. Choose two leaders and they in turn choose members for their sides.

It is surprising how many doctors' wives (and possibly doctors too), have not even heard of the bill.

Study the bill from both sides; then when the bill is discussed in other organizations of which you are members, you can discuss the matter intelligently.

—Mrs. F. A. Long, Madison.

GRADUATES, CREIGHTON UNIVERSITY COLLEGE OF MEDICINE, 1929, AND INTERNSHIPS

Thomas Brennan, David Gros, Thomas McCurdy, Arnold McDermott, Reynold J. O'Donnell, Lowell B. Privet, Paul J. Sullivan, Harry E. Stuckenhoff, St. Joseph's, Omaha; William M. Dendinger, John A. Liken, M. V. Popelar, S. Dale Porter, St. Catharine's, Omaha.

Dr. R. H. Adams, French hospital, San Francisco; Dr. J. Bolkavotz, St. Alexis hospital, Cleveland; Dr. W. J. Bierman, St. Francis hospital, Wichita, Kan.; Dr. R. E. Britt, Highland hospital, Oakland, Calif.; Dr. E. J. Buckley, St. Luke hospital, San Francisco; Dr. I. C. Carlino, St. Joseph hospital, Yonkers, N. Y.; Dr. C. J. Duling, St. Joseph hospital, Sioux City, Ia.; Dr. C. J. Ebner, St. Vincent hospital, Portland, Ore.; Dr. A. Fair, Sinai hospital, Baltimore; Dr. R. Friel, St. Mary hospital, San Francisco; Dr. E. C. Faulkner, San Francisco County, San Francisco; Dr. J. P. Gardiner, St. Paul hospital, Dallas, Tex.; Dr. L. W. Graff, St. Louis City and County, St. Louis; Dr. R. J. Gully, Public Health service, Chicago; Dr. D. W. Hand, Public Health service, San Francisco; Dr. L. J. Happe, St. Mary hospital, Minneapolis; Dr. J. J. Haun, St. Joseph's hospital, San Francisco; Dr. W. L. Herbert, St. Mary hospital, Minneapolis; Dr. G. L. Kaiser, Charity hospital, New Orleans; Dr. M. E. Kallman, Colorado Psychopathic hospital, Denver; Dr. R. J. Keenan, Methodist hospital, Los Angeles; Dr. J. G. Kruml, Mercy hospital, Des Moines; Dr. J. M. Krupa, Westside hospital, Chicago; Dr. H. E. Kully, Cincinnati General hospital, Cincinnati; Dr. J. H. McPharlin, St. Joseph hospital, San Francisco; Dr. F. E. Mork, St. Mary hospital, Minneapolis; Dr. R. T. O'Neill, St. James hospital, Butte, Mont.; Dr. H. B. Paulson, Good Samaritan hospital, Portland, Ore.; Dr. W. A. Peterson, Good Samaritan hospital, Portland, Ore.; Dr. M. A. Premo, St. Joseph hospital, San Francisco; Dr. H. M. Radmon, Sinai hospital, Baltimore; Dr. H. F. Rohs, Good Samaritan hospital, Cincinnati; Dr. B. Slutzky, St. Vincent hospital, Portland, Ore.; Dr. R. B. Toller, St. Luke hospital, San Francisco; Dr. John Trautman, U. S. P. H. S., Chicago; Dr. R. J. Van Wagenen, St. Alexis hospital, Cleveland.

GRADUATES, UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, 1929, WITH INTERNSHIP APPOINTMENTS

Anderson, Otis L., U. S. Marine Hospital, No. 1, Baltimore, Maryland.

Aten, Eugene L., Ancker Hospital, St. Paul, Minn.

Banister, Edwin B., Swedish Covenant Hospital, Chicago, Ill.

Bollig, Harold L., Methodist Hospital of Southern California, Los Angeles, Calif.

Bozarth, Elton P., Methodist Hospital of Southern California, Los Angeles, Calif.

Brown, Harold I., U. S. Naval Hospital.

Bruning, Edward F., Methodist Hospital, Omaha, Nebr.

Busby, Lauren F., University Hospital, Omaha, Nebr.

Calvert, John H., Henry Ford Hospital, Detroit, Michigan.

Coder, Harold E., Letterman Hospital, San Francisco, Calif.

Daily, Kaho, Evangelical Covenant, Omaha, Nebr.

Dillenbeck, Floyd E., University Hospital, Omaha, Nebr.

Donelan, James P., Swedish Immanuel, Omaha, Nebr.

Drdla, Theodore, Murray Hospital, Butte, Montana.

Gairdner, Thomas M., Long Island College Hospital, Brooklyn, N .Y.

Glathar, Albert W., Colorado General, Denver, Colo.

H. J. Green, Seattle General Hospital, Seattle. Washington.

M. C. Green, St. Joseph Hospital, Kansas City, Mo.

Guildner, Charles W., Multnomah Hospital, Portland, Oregon.

Gwinn, Allen C., Tacoma General Hospital, Tacoma, Washington.

Halliday, Arthur B., Maria Baird Deaconness, Spokane, Washington.

Hamsa, William R., Evangelical Covenant Hospital, Omaha, Nebr.

Hansen, Douglas E., Holy Cross Hospital, Salt Lake City, Utah.

Heilesen, William E., King County, Seattle, Washington.

Hurdum, Herman M., University Hospital, Omaha, Nebr.

Karrer, Frederick M., Ancker Hospital, St. Paul, Minn.

Katsuki, Sanford M., Methodist Hospital, Omaha, Nebraska.

Larsen, Harold V., Seattle Gen. Hospital, Seattle, Washington.

Lewis, E. V., Lincoln General Hospital, Lincoln, Nebraska.

Luscombe, Harold B., Letterman General Hospital, San Francisco, California.

McAlister, Lawrence S., Jennie Edmundson, Council Bluffs, Iowa.

Madsen, Charles C., Immanuel Hospital, Omaha, Nebraska.

Malzacher, John W., Columbus Hospital, Seattle, Washington.

Mechtenberg, Wm. R., Chicago Memorial Hospital, Chicago, Illinois.

Miller, Harold N., St. John's Hospital, Cleveland, Ohio.

Moes, Robert J., California Lutheran Hospital, Los Angeles, California.

Murphy, Francis J., Grasslands Hospital, Valhalla, New York.

Myers, Dr. J. T., University of Nebraska College of Medicine, Omaha.

Norall, Victor D., Methodist Hospital, Omaha, Nebr.

Nuss, Herman V., Lutheran Hospital, Beatrice, Nebraska.

Porter, Horace H., Missouri Methodist Hospital, St. Joseph, Minnouri.

Porter, Steven A., Providence Hospital, Seattle, Washington.

Ragan, Lloyd E., Immanuel Hospital, Omaha, Nebr.

Rice, Raymond M., Clarkson Hospital, Omaha, Nebraska, and Cleveland City Hospital, Cleveland, Ohio.

Rodwell, Robt L., Lincoln General Hospital, Lincoln, Nebraska.

Saxton, Alton J., King County, Seattle, Washington.

Schroeder, Ralph L., Douglas County Hospital, Omaha, Nebraska.

Simonsen, Marie, Lutheran Hospital, St. Louis, Mo.

Smith, Clifford L., Swedish Hospital, Seattle, Wash.

Smith, Merle E., Hillman Hospital, Birmingham, Alabama.

Stander, Thomas R., Clarkson Hospital, Omaha, Nebraska.

Stibal, Jerrold F., Highland Park General, Highland Park, Michigan.

Stillinger, Cecil G., U. S. Public Health.

Strowbridge, Philip M., Los Angeles General County Hospital, Las Angeles, California.

Teal, Frederick F., Jr., Wesley Memorial Hospital, Chicago, Illinois.

Thompson, C. Edward, Henry Ford Hospital, Detroit, Michigan.

Tipton, Paul W., Covenant Hospital, Omaha, Nebr.

Tollman, James P., Peter Bent Brigham, Boston, Mass.

Troup, Wilson J., Long Island College Hospital, Brooklyn, N. Y.

Tucker, Guy J., Ford Hospital, Detroit, Michigan.

Turner, William D., King County, Seattle, Wash.

Tyson, Roland W., Northern Pacific, Tacoma, Wash.

Waltemath, Glen F., Gorgas Hospital, Ancon, Canal Zone.

Weigand, Clayton G., Clarkson Memorial, Omaha, Nebraska.

Wengert, Dorwin B., Bell Memorial Hospital, Kansas City, Kansas.

Wessly, William D., Mt. Zion Hospital, San Francisco, California.

Whittier, LaMont, Gorgas Hospital, Ancon, Canal Zone.

Winkle, Vernon M., Clarkson Hospital, Omaha, Nebraska.

Worthman, Herbert W., Louisville, Nebraska.

Wyatt, Merlin R., Methodist Hospital, Omaha, Nebraska.

Yoder, Wray A., Covenant Hospital, Omaha, Nebr.

Lewis, James T., General Hospital No. 2, Kansas City, Missouri.

THE SOCIETIES

Members of the **Gage County Medical Society** were guests of the **Lancaster County Medical Society** at a dinner and meeting May 17. Members of the visiting organization made short talks. Twelve Gage county doctors attended.

The dinner was held at the University club and the regular monthly meeting at the headquarters in the Sharp building. Speakers were Doctors Waddell, Rush, Judd and Tucker of Beatrice. Dr. Roscoe Smith presided.

The semi annual meeting of the **Republican Valley and 10th Councilor District Medical Society** was held at McCook, Nebr., May 29 with 40 members attending. A three-inch rain over the Republican Valley the morning of the meeting cut attendance in half. Dinner was served to the physicians and wives at the Keystone Hotel where we were welcomed by an address by Mr. L. A. Kiplinger. This was answered by the famous orator of Hastings, Nebr., Dr. J. V. Beghtol. The program given in the assembly hall of the hotel was of intense interest and the contributors had been at great pains to bring short but meaty papers to the society all laying great stress on what can be accomplished by the general man without extensive laboratory help in diagnosis and treatment of relatively uncommon conditions.

Program follows:

Doctor A. D. Munger, Lincoln, Nebr.
Ureteral Calculus and Management and End Results 100 cases.

Doctor Geo. W. Covey, Lincoln, Nebr.
Coronary Occulusion with demonstrations of pathological specimen.

Doctor Harry H. Everett, Lincoln, Nebr.
Surgical Pancreatitis.

—L. F. Egen, M. D., Secretary.

The **Madison Five Counties Medical Society** meeting was held at Pierce, May 28th, following a dinner served by the young ladies of the town in the domestic science rooms of the high school building. Twenty-five physicians and their ladies were present.

Dr. Walter Benthack, Pierce, read a paper on the "X-Ray in Skin Diseases." He traced the discovery and development of the x-ray and gave a number of case reports of skin lesions successfully treated by x-ray.

Dr. Clyde Moore, Omaha, gave a paper on "Ear Infections as a Factor in Nutrition of Children." Mastoid and middle ear infections are responsible for many cases of gastro-intestinal upsets in children as well as for acute bronchial and pneumonic conditions, as is proven by the prompt relief afforded by drainage of the middle ear and mastoid cells. Dr. C. R. Kennedy, Omaha, gave a screen lecture on "Congenital Pyloric Stenosis." Dr. Kennedy's drawings were of a high order and the subject was presented in a very lucid manner.

The **Saline County Medical Society** held its "annual round-up" meeting at Friend, June 4, those attending being the guests of Drs. Frank Hamilton and Rodney Johnson. Every year, once, the doctors from all the surrounding towns outside of the county are invited.

The subject for discussion was Syphilis. Dr. —— Rush presented the History, Dr. H. M. Elsner the

Pathology, Dr. L. J. Owen the Modern Treatment, while Dr. M. F. Arnholt presented the angle of the City Physician and Dr. P. H. Bartholomew the angle of the United States Public Health Service. The printed program was gotten up in shape of a coffin.

HUMAN INTEREST TALES

Dr. J. F. Maloney has moved from Omaha to Liberty.

Dr. Victor Levine, Omaha, spoke at the Benson Parent-Teacher association May 13, on Nutrition and Health.

Dr. E. C. Foote and family, Hastings, returned from study in India and a trip around the world the latter part of May.

Dr. Olga Stastny, Omaha, spoke on Health before the Fremont Business and Professional Women's club dinner May 20.

Dr. D. D. Davis, Liberty, has disposed of his interests and will locate in Colorado.

Dr. C. W. Way, Waterloo, spent the month of June at Rochester and Chicago clinics.

Dr. Henry Farrell, Kearney, has gone to London and Vienna clinics for several months stay.

Dean J. J. Keegan of the University of Medicine submitted to an appendectomy late in May.

The marriage of Dr. Harvey L. Clarke, Jr., and Miss Beverly Wurtelle, North Platte, May 22, is announced.

Dr. L. F. Chapman and family, West Point, are on an extended auto trip for the benefit of the doctor's health.

The license of Dr. Don. Smith, Wilsonville, revoked by the department of welfare, was restored by the district court.

Dr. P. A. De Ogny, Milford, was elected president of the Nebraska State Eclectic Medical association at the annual meeting in Lincoln, May 22.

Dr. Margaret Hammond of Lincoln was elected president of the Nebraska Association of Medical Women at the annual meeting in Omaha, in May.

The new Scottsbluffs Clinic building of 17 rooms has been opened. Drs. N. H. Rasmussen, T. E. Riddell, and J. N. Stoops together with a dentist comprise the clinic.

Dr. C. S. Shook, native Omahan, captain in the aviation medical corps, visited in Omaha recently while enroute from Schofield Barracks, Honolulu, after three years service, to service at Langley Field, Va.

Dr. Frank S. Nicholson, St. Paul, was the victim of an auto accident while returning from a night call in the country, resulting in severe injuries and a much damaged car. Momentarily dosing is supposed to have been the cause of the accident.

NECROLOGY

G. A. Flippin, (Colored), Stromsburg, Nebr.; University of Illinois College of Medicine, 1900; practitioner at Stromsburg, for some years; in the early nineties one of the first great Cornhusker football players of the University of Nebraska; once elected captain of the football team; died May 15 of organic heart disease following an attack of influenza, aged about sixty-one years.

William W. Bowser, Omaha, Nebr.; University Medical College of Kansas City, 1911; practitioner of Omaha since graduation; died after an illness of three years, June 3, 1929, aged about sixty-three years.

L. E. Sleeper, Chicago; Northwestern University Medical School, 1904; practitioner first at Crawford and later at Alliance, Nebr., doing eye, ear, nose and throat work, until about three years ago when failing health compelled removal to Chicago, his former home; died May 25, 1929, aged about fifty-two years. Interment, Crawford, Nebr.

BOOKS RECEIVED

Diseases of the Thyroid Gland, by Arthur E. Hertzler, M. D., with a chapter on Hospital Management of Goiter Patients, hy Victor E. Chesky, M. D. Cloth, 8 mo., 279 pages with illustrations. Price $7.50. The C. V. Mosby Co., St. Louis, 1929.

The Physiology of Love, by George M. Katsainos, Ph. D., M. D. Cloth, 8 mo., 326 pages. Price $4.00. Privately printed at Boston, Mass., 1929.

Devils, Drugs and Doctors, by Howard W. Haggard, M. D. Cloth, 8 mo., 396 pages with many illustrations from original sources. Harper & Brothers, New York and London, 1929.

Diseases and Deformities of the Spine and Thorax, by Arthur Steindler, M. D., F. A. C. S. Cloth, 8 mo., 560 pages with 76 plates. Price $12.50. The C. V. Mosby Company, St. Louis, 1929.

The Injection Treatment of Hemorrhoids, by Charles Conrad Miller. Cloth, 8 mo., 121 pages with illustrations. Modern Surgery Publications, Chicago, 1929.

Tuberculosis and How to Combat It, by Francis M. Pottenger, A. M., M. D., LL. D., F. A. C. P. Cloth, 8 mo., 266 pages. Second Edition. Price $2.00. The C. V. Mosby Co., St. Louis, 1928.

Injection Treatment of Internal Hemorrhoids by Marion C. Pruitt, M. D., L. R. C. P., S. (Ed.), F. R. C. S., (Ed.), F. A. C. S. Cloth, 8 mo., 133 pages with illustrations. Price $3.00. The C. V. Mosby Co., St. Louis, 1929.

The Technic of Local Anesthesia, by Arthur E. Hertzler, A. M., M. D., Ph. D., LL. D., F. A. C. S. Cloth, 8 mo., 278 pages. Fourth Edition, with 146 illustrations. Price $6.00, the C. V. Mosby Co., St. Louis, 1928.

Youthful Old Age, by Walter M. Gallichan. Cloth, 8 mo., 236 pages. Price $2.50. The Macmillan Company, New York, 1929.

Edema and Its Treatment, by Herman Elwyn, M. D. Cloth, 8 mo., 160 pages. Price $2.50. The Macmillan Compay, New York, 1929.

BOOKS REVIEWED

ANNUAL REPRINT OF THE REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR 1928: Cloth. Price postpaid, $1.00. Pp. 175. Chicago: American Medical Association, 1929.

This book is a great deal more than a mere record of the negative actions of the Council on Pharmacw and Chemistry. It gives in full the reasons for the Council's rejection of various proparations, but it also records results of the Council's investigations of new medicinal agents not yet out of the experimental stage, and frequently contains reports on general questions concerned with the advance of rational drug therapy. All three categories of reports are represented in the present volume.

Among the reports on products that have been denied admission to New and Nonofficial Remedies are those on Sanarthrit and Telatuten, two preparations of animal tissue, of indefinite composition, proposed for use in arthritis and arteriosclerosis respectively; on Clauden, a combination of lipoids and undefined proteins, proposed for use as a hemostatic; on Hart's Alimentary Elixir of Beef, a liquid medicinal food, "fortified" with glycerophosphates; on Alucol, claimed to be colloidal aluminum hydroxide and marketed under this nondescriptive name; on Oxo-Aate and Oxo-Ate B, claimed to be the ammonium and calcium salts, respectively, of orthoiodoxybenzoic acid and marketed under these proprietary, nondescriptive names; on Terpezone, stated to be pinene ozonide and marketed with exaggerated and unwarranted claims; on Vitalipon, an unscientific and indefinite mixture of lipoids claimed to be extracted from "vegetable and animal embryonic organs"; on Kalak Water, a solution containing sodium bicarbonate with many other ingredients of questionable utility, marketed under a non-descriptive name with unwarranted therapeutic claims; on Eu-Med, Aerosan Tablets, and Thyangol Pastilles, three shotgun mixtures from Germany.

Among the preliminary reports are those on Metrazol, which has now been admitted to New and Nonofficial Remedies; on Phenylaminoethanol sulphate, a newly synthesized ephedrine substitute; on Ovarialhormon Folliculin Menformon, the ovarian preparation originated by Dr. Laqueur of Amsterdam; and on Heparmone, a liver preparation.

The special report dealing with dextrose solutions containing cresol and intended for intravenous administration is a note-worthy example of the third category of Council reports we have mentioned.

NEW AND NONOFFICIAL REMEDIES, 1929, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1929. Cloth. Price, postpaid, $1.50. Pp. 488; xlviii. Chicago: American Medical Association.

This book offers a solution to the problem of the busy physician who is daily importuned by "detail" men to try the thousand and one new preparations brought out by enterprising manufacturers of pharmaceuticals. If the preparation in question is not described in New and Nonofficial Remedies, it is quite safe to refuse to try it no matter how alluring the salesman's talk. The book contains descriptions of those new preparations which, after painstaking examinations, the Council on Pharmacy and Chemistry has found worthy of recognition and of trial by the medical profession. It is revised each year to bring it up to date with the best medical thought and to include the new preparations that have been recognized during the year as well as to delete those which have been found not to live up to their promise of therapeutic value.

In this edition there appears for the first time an article on liver preparations and their therapeutic use. The articles on ergot, metallic peroxides, pituitary gland, and radium and radium salts have been considerably revised. Among the new prapartions which have been included in this edition are: Diphtheria toxoid, which is the toxin of diphtheria so modified by treatment with formaldehyde as greatly to reduce its toxicity yet preserving its antitoxic power; metrazol, another proposed substitute for camphor; liver extract No. 343 and concentrated liver extract-Armour, for the treatment of pernicious anemia. Other newly accepted articles are: Bismuth sodium tartrate-Searle, another water soluble bismuth tartrate preparation; scarlet fever toxin-P. D. & Co., another scarlet fever toxin manufactured under lease of the Scarlet Fever Commission; para-thyroid hormone-Squibb, standardized by the method of J. B. Collip, and parodin, made and standardized by the method of A. M. Hanson, both being solutions of the active principle or principles of parathyroid gland for appropriate clinical use. An important deletion is the omission of all generators charged with radium.

A new departure in this edition is a list of "exempted" articles. This comprises some hundred and thirty medicinal and non-medicinal products examined by the Council and found to be of such composition and to be so marketed as not to require acceptance or rejection by the Council under its rules.

A section of the book (brought up to date each year) gives references to proprietary articles not included in New and Non-official Remedies. This list, in conjunction with the book proper constitutes a cumulative index of proprietary medicines, which physicians may consult when a proprietary product is brought to their attention. Physicians cannot dispense with the use of the newer remedies that are brought out each year; yet they can neither judge them on the basis of the manufacturers' claims nor have they the time or means to determine their merits for themselves. For this reason, every physician should possess a copy of this volume, which annually puts at his disposal an authoritative, up to date, and unbiased estimate of these preparations.

DOCTORS

It used to be when we were sick
And called the doctor in,
He would pull a bunch of whiskers
That was hanging on his chin,
Take our pulse and respiration
And maybe crack a joke;
That from surface indications
It was not our time to croak.

He would measure out some powders
With the handle of a spoon,
Charge a dollar for his visit
Then we'd die or get well soon.
It might be that his powders
Were of sugar, salt or glue,
But that doctor with the whiskers
Nearly always pulled us through.

Psychology in whiskers,
It is a funny thought,
I'll leave it to your judgment,
May be so and may be not;
You may read the Bible story
How Sampson strong and brave
Called on a lady barber
For a hair cut and a shave.

How his strength was taken from him,
Why it was no man could know,
How he had to stay in prison
While his hair and beard could grow;
Strong again, he rent the temple,
Killing thousands of his foes,
Though I was not there to see it
That is how the story goes.

There are mysteries in nature
That never will be known,
Till the veil of time is lifted
And we come into our own;
Nowadays when the doctor comes
He tells you how-de-do, and says
I see you're mixing up
With your old friend, the flu.

He will speak of operations
And about an untrained nurse,
Till it starts a fellow thinking
Of a joyride in a hearse.
When he gets you where he wants you
He will use a saw and knife,
With a hired man to help him
While he tries to take your life.

But here is to the doctor
His average is high
We cannot do without him
And there is no use to try.

—Harvey Kirkland.

Physician says one million women are overweight. These, of course, are round figures.—Arkansas Gazette.

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SURGICAL JUDGMENT*

W. J. ARRASMITH, M. D.,
Grand Island, Nebr.

In approaching the subject of surgical judgment, one is inclined to restrain some of his ideas, because of divergence of opinion that is certain to arise among surgeons. The personal equation always has been and always will be a factor when trying to pass judgment on some particular problem. Unfortunately, we can never have set rules to follow, because each case is an entity, requiring its own solution.

Surgical judgment, the judgment on which treatment is based, is of supreme importance in the practice of surgery. An operation can be performed ever so skilfully and be a total failure, because of an error in judgment.

Judgment is nothing mysterious. It is not an inborn quality, possessed by a few and deprived to many. It is the operation of the mind, involving comparison and discrimination. It is based on knowledge and developed by study, perseverance and honesty. It is matured by experience.

It may seem academic to reiterate the necessity of a detailed history, physical examination and laboratory findings in this paper. However, in discriminating the procedure to be adopted, there is no one factor more important than a detailed history. A casual history, or the taking of a few notes, may be misleading. The early symptoms may offer the key to the situation. Furthermore, secondary symptoms may arise, due to some other lesion, which may mask the symptoms on which good judgment is based. Sins of omission in details may be the cause of a fatality. A patient may complain of hemorrhoids and desire to have them operated. The history may reveal a story of occasional attacks of pain over the precordium, following exercise or the ingestion of a large meal. These symptoms would immediately give clue to an angina pectoris and preclude an operation, which might result fatally and cause considerable embarrassment in explaining why the patient should succumb following a hemorrhoidectomy.

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*Address on Surgery, delivered at the annual meeting, Nebraska State Medical Association, Omaha, May 14, 1929.

Of almost equal importance is the physical examination, which must always be done conscientiously, and with an open mind, not with a view of trying to find altogether signs and symptoms to verify some possible surgical lesion, which was developed in the history. The examination should be conducted in a way that all abnormal processes are recorded. The finding of unequal pupils or abnormal reflexes might alter the opinion and place the patient in the medical instead of the surgical category. Details, apparently of minor importance, should never be neglected. Success or failure of the undertaking may rest entirely upon them. Observing the character of the skin and mucous membrane, conditions of the arteries, activity and nutrition of the patient, only tends to sharpen our ability to select good risks. Too often poor risks are selected, due to the neglect of not having a composite picture of all the existing conditions. As one's experience becomes more mature, he developes an intuition which gives him valuable information. A glance at the patient with his clothes removed oftentimes speaks volumes. Unfortunately, this sort of information cannot be expressed in words, but it can be acquired by contact with master surgeons, attention to details and perseverance.

In the early days of surgery, the laboratory was of minor importance. The modern surgeon avoids many dangerous pitfalls by its frequent use. Routine blood and urine examinations should be done on all patients submitting to any form of surgery. It might seem superfluous at times to resort to a urine examination preceding the opening of a superficial abscess about the body. On the other hand, if the examination is done, diabetes in a severe form might be elicited. After the proper precautions, the patient's life might be spared. Whereas, if the abscess is carelessly opened, you might soon be dealing with a diabetic coma, as the result of an error in judgment.

Blood examinations oftentimes give us a clue to a primary anemia, which would contra-indicate many operative procedures. Blood chemistry in particular gives us data at times, which I am sure is life-saving. Today one would not operate a jaundiced patient without knowing what the Van den Bergh is doing. Neither would he operate a prostate or any lesion of the genito-urinary system without knowing what the progress of the non protein nitrogen is. Tests such as these are indispensable and always help to avoid an error in judgment. Many other illustrations could be given, but that is not necessary, because all of us can recall instances wherein our judgment was erroneous, due to the lack of proper laboratory examination.

The x-ray and other mechanical examinations should be used most freely, whenever there is an indication for their use. Metastases from innocent lesions and other unexpected pathological conditions are oftentimes found. Some months ago, I saw a patient who complained of a lump in the left side of his neck. The lump was freely moveable and looked as though it could be removed easily in the office under local anesthesia. After a detailed history and physical examination, including x-ray of the chest, metastasis in the lungs was found. This fact altered the procedure entirely. The lump was not removed, and the facts were explained to the patient.

The basal metabolic machine is another method of mechanical diagnosis which is of great importance in determining the time to approach the toxic goitre problem. These tests and machines are unquestionably of great value when used properly. On the other hand, in the hands of the unscrupulous and indiscriminate, the x-ray and basal metabolic machines, particularly, are dangerous. Both of these machines are now available at a nominal figure. Pictures are easily taken, but are not easy to interpret. A dishonest person too often uses these good machines from a salesmanship point of view. He knows in his own mind that his interpretation is not secure. Therefore, it is impossible for him to use sound judgment, excepting perhaps, from a mercenary point of view.

The Cole-Graham technic of cholecystrography is a most admirable discovery. It unquestionably is of great importance to the expert. The technic is so simplified at the present time that it can be administered by anybody, and pictures of the gallbladder obtained. Too often an operation is sold on the basis of a picture only. Recently, I saw a young girl, age 19, who gave a history of having struck her left side on a wagon box, two years previously. Since then she had complained of an aching along the left costal margin. Previous to the time I saw her, she was submitted to cholecystography, a diagnosis of gallbladder disease was made, and an operation sold to her. Both the gallbladder and appendix were removed. When I saw her some weeks following her operation, she had her original complaint of aching along the left costal margin, coupled with a market neurosis. Too many gallbladders are sacrificed because of wrong interpretation of an x-ray picture. Again, too many normal thyroids are resected because of wrong interpretation of the basal metabolic machine. The machine as well as the technician is subject to error. The metabolic test must only be considered as an adjunct to the diagnosis. It should never make the diagnosis to the exclusion of the cardinal symtoms of toxic goitre. Sound surgical judgment can never be given when one relies entirely upon machine made diagnoses. We must forever keep in mind the necessity of a careful history and complete physical examination, both of which are always of more significance than any other test known, to place a man in position to pass the proper kind of judgment.

The object of any surgical procedure is to restore the normal physiological function as nearly as possible. Without having a good background in physiology, one would be greatly handicapped in trying to plan the restoration of the normal function. Suspending a normal, nonpregnant, retroverted uterus for vomiting, or removal of the tubes and ovaries to prevent a goitre from re-forming, is not consistent with good physiological reasoning. An appreciation of the function of the various organs of the body is of prime importance. If one does not understand the normal physiology thoroughly, it is hard to correct a pathological condition and attempt to restore the normal process, which we should endeavor to do in every attempt at a surgical operation.

Concomitantly with a knowledge of normal physiology is a good knowledge of gross pathology. Identification of diseased tissue is not altogether simple in some instances. Small lesions such as duodenal ulcers and early malignant growths are oftentimes unrecognized, due to a lack of training in pathology. We are all subject to mistakes in diagnosis, but if we know living pathology, we can greatly supplement our preoperative diagnosis at the time of operation, and oftentimes diagnose a lesion, which could not have been recognized otherwise. Judgment will then determine the proper procedure to minimize risk and relieve the patient of his symptoms. The unsuspecting pathological lesion sometimes taxes our judgment almost to the breaking point. The better we are armed for these emergencies, the better our judgment. A quick, trustworthy decision, when the abdomen is open is essential. This decision can only be commensurate with the operator's knowledge of gross pathology.

Too often the dictum of "a successful operation, but the patient died" is applied. Is such a statement correct, excepting, perhaps, in accidental deaths such as embolism, post-operative pneumonia, etc? Should it not read, "the surgical procedure was successful, but the operation was a failure," because when one speaks of an operation, he should consider more than just the technic used in the specific operation. The judgment must always be considered as a part of any operative procedure, therefore, if an error in judgment existed, the operation could not have been a success. The statement only serves as an alibi to deceive us into believing that we have done a successful piece of work, whereas, if the actual facts are known and are truthfully sought out, it will revert to surgical judgment.

Unfortunately, the millinneum is not here. Surgeons are going to make errors in judgment, but most of these errors can be traced to omissions in securing the essential data on which to base good judgment. Defective judgment applies to the surgeon occasionally. On the other hand, defective judgment applies to the operator often. The operator may have technical skill, but has poor judgment. The surgeon has technical skill with an abundance of good judgment. He does not focus his attention on a pathological entity, to the exclusion of all other existing conditions, He considers the patient's welfare as a whole. He is always on the alert, trying to improve and continually trying to account for morbidity and mortality.

At the time of graduation, it is presumed that all Doctors possess about equal knowledge of the fundamental principles of surgery, but unfortunately, not all of them improve this knowledge to the same degree. Too often through mental laziness, indifference or mercenary motives, some capable men allow themselves to retrogress until they cease to cherish or value with much regard, the life and health of the patient. Should there not be some method by which this fact could be established?

Reforms come slowly. They cannot be forced. Through education only can the evils in surgery be eliminated. This is gradually being accomplished by the American College of Surgeons and the American Medical Association, by the standardization of hospitals in such a way that case histories, examinations and follow-up records must be kept. If the staff meetings are properly conducted in the hospitals, a mercenary operator without a conscience, who buys his work on the fee-split basis, will soon be discovered. The aims of these institutions are most ideal, and eventually, perhaps not in your time or mine, the College will be able to classify surgeons, and our standardized hospitals will have such a reputation established that people will be thoroughly protected from the unscrupulous, inexperienced, pedantic surgeon.

DISCUSSION

B. B. DAVIS, M. D. (Omaha): I do not know if it is really courteous to discuss the regular Annual Address on Surgery; but this has been such a good paper and has brought forward to us so many truths with reference to surgery, I cannot forbear saying a few words. There isn't a thing the doctor has said with which I do not agree. I want to emphasize two or three things he said. I think we should descriminate between the acute emergency and the chronic case which offers more time for study. In sizing up a man's surgical judgment, he may operate on an acute surgical emergency where he would not if it were not an acute emergency. He has three pictures. First is the history; second is the physical examination; and third is the laboratory tests as a whole.

The man who is attempting to use his surgical judgment cannot use that judgment at all satisfactorily or wisely or for the benefit of the patient unless he can make a composite of those three pictures and let the history and physical examination and laboratory tests co-ordinate. If he is not able to co-ordinate them, he should study some more. When those pictures co-ordinate, he is ready to go ahead. I know in the past I have operated on cases that if I had studied enough I would not have operated. We must size up not the particular lesion for which the patient comes to us, but the patient as a whole, and see there is nothing in that case which precludes the operation desired.

Many times the patient will lay stress upon one condition when others are important. I had a case with a hernia. He wanted it operated. I found he had blood in his urine. The first thing we did was to make a diagnosis which precluded his having the operation done.

Get these three pictures—the history, the physical examination, and the laboratory tests—all co-ordinated, and then you will be able to go ahead safely.

ETIOLOGY AND TREATMENT OF PULMONARY ABSCESS*

CARL A. HEDBLOM, M. D.,
Chicago.

Pulmonary abscess is such a serious menace to the patient's life, the possible complications so many and grave, it is so difficult to cure and the chances of permanent impairment of the patient's health so great that every possible precaution should always be taken towards its prevention. Active rational preventative measures are possible only through an understanding of its several causes.

The recognized causes of pulmonary abscess in the apparent order of frequency are (1) conditions attending or following surgical operations which result in the introduction of pathological organisms of certain types into the lung. (2) Pneumonia. (3) Embolism. (4) Extension of infection from adjacent foci. (5) Trauma. (6) Specific types of infection. To these etiological groups must be added (7) Pulmonary abscess of uncertain or unknown cause.

During the last two decades at least, pulmonary abscesses have occurred as a postoperative complication more frequently than from any other cause. In a combined series of 2,458 cases reported in the world's literature 657 or 26.7 per cent followed some type of operation and 360 or 54.8 per cent of these followed tonsillectomy. A large proportion of the remaining cases followed other upper respiratory tract operations or inhalation of a foreign body.

Of 528 cases representing relatively large series, including the authors, 218 or (41.3 per cent) developed after an operative procedure. In 130 (59.6 per cent) of these 218 cases, the operation was a tonsillectomy and in 52 cases (23.8 per cent) other operations about the mouth. It develops then that more than 80 per cent of these postoperative cases followed an operation about the upper respiratory tract.

Chief interest in the subject of etiology during recent years has centered in the question as to whether these postoperative pulmonary abscesses have developed predominatingly from blood stream infection or from aspiration of infectious material. The question is not one of mere academic interest but is one of greatest practical importance from the standpoint of prevention. If the infection is carried through the blood stream the accident may be considered very much like an act of God that cannot be foreseen or hindered. If, on the other hand, the infection is carried to the lung chiefly by way of the respiratory tract it can be largely prevented.

Up to recent years it seemed to be pretty generally believed on the basis of clinical considerations that aspiration of infection represented the most frequent etiological factor. The experimental investigations of Cutler and his associates then seemed to largely discredit this belief. These workers found it impossible to produce abscess in dogs by instilling infected material into the bronchial tract but were able to produce abscesses almost at will by introducing infection into the jugular or femoral vein. They also found emboli, often infected, in veins in the tonsillar fossae in patients following tonsillectomy. They pointed to the action of the pharyngeal muscles as favoring the dislodgement of such infected thrombi into the venous circulation. The disproportionately large incidence of post-tonsillectomy abscess they considered more apparent than real since tonsillectomy comprises a large proportion of the total number of operations performed in many hospitals. On the basis of such considerations embolism has come to be considered by many as the most frequent cause of postoperative abscess.

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*Presented before the annual meeting, Nebraska State Medical Association, Omaha, May 14, 1929.

The evidence pointing to aspiration of infection as the most important factor is both experimental and clinical. A number of investigators have been able to produce abscesses in experimental animals including the dog under conditions that closely simulate clinical conditions.

Smith, Allen, Joannides and others produced abscesses by instilling pus from patients with pulmonary abscesses within the bronchial tract. Joannides working with me was able to produce abscesses in over 70 per cent of the dogs by mixing blood with infection from tonsils which precisely copies actual conditions in the human. Pilot has produced abscesses by mixing the infection with lipiodol. Apparently the blood and lipiodol simply prevent the cough expulsion of the infection. Crowe and Scarff produced abscesses in dogs by introducing into a bronchus pledgets of cotton soaked with infection from a pulmonary frontal sinus infection containing a mixture of bacteria but no spirochetes or fusiform bacilli. He believes that an obstruction in the bronchus containing the infection is an important factor.

The clinical evidence of aspiration infection seems very convincing.

Some of the most important features of this clinical evidence are as follows: (1) Bronchitis is the most common post operative pulmonary complication representing from one-third to one-half the total number of them. (Beckman, Cutler, Hunt, Wolff). It has been shown by Winternitz and Smith and Robinson that infection in the bronchus may pass through the damaged mucosa into the pulmonary tissue by way of the lymphatics. (2) Most post-operative pulmonary abscesses follow operations under general anaesthesia, during which the protective pharyngeal reflex is obliterated in whole or in part. Among 208 post-tonsillectomy abscesses only seven were in patients operated under local anaesthesia. It is conceivable that in some of such cases the protective pharyngeal reflex is obliterated by the local anaesthesia. (3) By far the largest proportion of abscesses follow tonsillectomy, teeth extractions, and other operations about the mouth. Wound infection not infrequently occurs following thyroidectomy in which there must result infected thrombi in large veins, yet post-thyroidectomy abscess must be very rare. I have not seen a case nor found one reported in the literature. (4) Pathogenic organisms including spirochetes and fusiform bacilli have been demonstrated from tonsillar crypts and about the teeth by Pilot and Davis in fifty per cent of patients of the free dispensary and identical organisms have been found at necropsy in a large proportion of postoperative pulmonary abscess. (5) Myerson has shown that blood had found its way into the trachea in over 70 per cent of 200 patients following tonsillectomy performed in the horizontal position. Lemon has shown that dogs will regularly aspirate wet bismuth powder into the bronchial tract during the course of one hour general ether anaesthesia. The ease with which non-irritating material may find its way into the bronchial tract is well shown in the routine diagnostic instillation of lipiodol through the mouth without any preliminary local anaesthesia. (6) Recovery of teeth, dentures, and other material from the abscess following dental operations under general anaesthesia and the frequent incidence of other foreign body abscesses is indisputable direct evidence of the occurrence of aspiration infection (Hedblom). The occurrence of abscess in epileptics and following alcoholic intoxication and in stupor or unconsciousness from any causes can scarcely be explained on any other basis. (7) The largest nose and throat clinics of the country record a total of several hundred thousand operations about the mouth, with a minimal incidence of pulmonary abscess. If any large proportion of such complications were due to embolic infection the condition for the formation of which from the embolic standpoint are constant and largely unavoidable it would seem reasonable to expect everywhere uniform incidence of this complication.

Summarizing the evidence as to the mechanism of postoperative infection points, it would seem to aspiration as by far the most important factor.

Fundamentally three factors determine the development of aspiration abscess, namely, an inhibited cough reflex, inability to expell the aspirated material once it has gained admission into the bronchial tract, and a high degree of virulence of the infectious material aspirated. The most important factors in prevention, therefore, are preserving the cough reflex as far as possible by local or light, short, general anaesthesia, performing all general anaesthesia operations about the mouth and nose with the patient in such position that the blood and secretions will gravitate away from the trachea, avoiding operations in the presence of an acute upper respiratory tract infection, prophylactic cleansing of the mouth especially with respect to pyorrhea alveolaris, and the reduction to a minimum of accumulation of blood and secretions in the pharynx. Prevention of aspiration of teeth and other foreign material during dental operations and of vomitus and sputum during any operation and recovery from general anaesthesia and during unconsciousness from any cause are important prophylactic measures.

The other causes of pulmonary abscess are of less importance from the standpoint of prevention and, therefore, will be only briefly outlined.

2. Pneumonia. The relative incidence of post pneumonic abscess is uncertain. One hundred thirteen (21.4 per cent) of 528 patients give a history of pneumonia at the onset of symptoms. In a total of 1017 cases of abscesses including many individual case reports pneumonia was given as the cause in 270 (26.5 per cent). Yet Hartwell writes that of 770 consecutive cases of pneumococci lobar pneumonia at the Rockefeller Hospital only two developed abscess and in each of those two the abscess was due to other organisms.

The relative frequency of broncho-pneumonia abscess is also uncertain. The impression that pneumonia in its various forms is a frequent cause of abscess is probably due in part to the fact that pneumonia is of such frequent incidence and in part to the fact that in many cases the first clinical manifestations of the disease are those of a pneumonia or pneumonitis, the underlying etiological factors remaining unrecognized.

3. Embolic abscess. Embolic abscess may result from pyemia or from infected thrombi originating in a thrombo-phlebitis, thrombosis of the sigmoid sinus, puerperal sepsis or from ulcerative endocarditis. Any infected wound may give rise to an infected thrombus but the relative rarity of this complication among the great number and variety of infected wounds is striking. Twenty-one (3.9) per cent) of 528 cases of pulmonary abscess were of certain or probable embolic origin.

4. Extension of infection. An abscess underneath the diaphragm such as a liver, perigastric, subdiaphragmatic or perirenal abscess, an empyema or a suppurative gland by perforating into the lung, or by lymphatic extension, may produce a secondary pulmonary abscess. Occasionally a primary carcinoma of the lung will bread down into an abscess. 3.0 per cent of 528 cases of abscess originated by extension.

5. Trauma. Blunt trauma from a blow, fall, or crushing injury may actually rupture the lung or may produce an interstitial ecchymosis and edema followed by a pneumonitis or gangrene and liquefaction of the injured portion. Abscess following penetrating injuries such as produced by a gunshot wound or stab is due in large measure to devitalizing trauma but the infection may develop long after the injury has healed.

6. Specific infection. Actinomycosis, amoebic infection, infected ecchymococcus cyst and the lung fluke represent rare types of infection producing pulmonary abscess. Twenty-nine cases of actinomycosis abscess are reported among 170 cases of actinomycosis. Twelve cases of amoebic abscess are reported in the recent literature.

7. Abscess of indeterminate etiology. There remains a considerable group of cases in which the cause of the abscess cannot be ascertained. In 129 (24.6 per cent) of 528 cases and in 169 (23.2 per cent) of 730 cases including small series and individual case reports the etiology was indeterminate. Many of the patients in this group state that the onset of cough and sputum followed a "cold". In some instances an hemoptysis was the first symptom. In most instances the symptoms, physical findings, and course present nothing that distinguishes this etiological group. On the basis of considerations already mentioned it seems probable that many if not most of them originate from unrecognized aspiration of infected material.

TREATMENT

The treatment of pulmonary abscess may be grouped under the general heading of supportive measures, removal of causative factors, drainage and secondary procedures to bring about collapse and healing of persistent cavities.

Supportive measures are indicated in all cases in which there is marked constitutional reaction to the infection. Rest in bed, an abundance of fluids by mouth supplemented if necessary by proctocylsis or hypodermoclysis or both, a generous diet and transfusion of blood if the patient is anaemic or if there has been profuse or recurrent hemorrhage are general indications of prime importance. Postural drainage is sometimes of benefit. If there is oedema or a weak rapid irregular pulse digitalis should be given. A harassing cough that prevents rest and sleep should be alleviated by opiates.

The removal of a causative foreign body is of first importance. The possibility of the presence of a foreign body should always be kept in mind. The history and roentgenogram will usually determine whether or not a broncoscopic examination is indicated but it must be recognized that a foreign body may be translucent to the x-ray. Bronchoscopy may also serve in centrally situated abscess to establish more adequate drainage by cleaning out granulation tissue and by dilating a stenosed opening into the abscess cavity.

Expectant supportive treatment is the first indication in all cases. How long it should be continued in the hope of a spontaneous cure will depend essentially on the progress in the individual case and on the applicability of active measures.

If the patient improves progressively expectant treatment should be continued. About ten per cent of the cases of acute abscess, of such size as to be definitely recognizable clinically, get well spontaneously and perhaps fifteen per cent are more or less improved. Many patients will improve for a time and then come to a standstill. Others will show general improvement but the cough and sputum persist and the physical and roentgenological findings indicate that there is no tendency to healing. Active interference should be instituted then before sclerosis, secondary abscess, or bronchiectasis has developed. Usually eight to ten weeks should be the limit of expectant treatment in such cases. If the patient is losing ground and if there is extension of the abscess, active interference is indicated as soon as there is liquefaction of the involved lung parenchyma, as indicated by an evacuation of an abundance of sputum. Signs of a cavity when present also clearly indicate liquefaction.

The fundamental principle in treatment is drainage, through the bronchus or by thoracotomy. The simplest safest method that fulfills this requirement is the best. On this principle we may find indications for bronchoscopic instrumentation, pneumothorax collapse, thoracotomy drainage, and partial cautery extirpation.

The position of the abscess, the relative degree of bronchial drainage, and the size of the cavity are of prime importance in the choice of treatment. A peripheral abscess is likely to have produced pleural adhesions, making pneumothorax collapse impossible or hazardous on account of possible tear or perforation of the abscess wall into the pleural cavity, producing an empyema. Usually such a peripheral abscess will drain imperfectly even if pneumothorax collapse is safely achieved. Broncoscopic instrumentation of a peripheral cavity is difficult or impossible and to attempt it is ill advised. Such abscesses, especially if of considerable size, demand thoracotomy drainage through the chest wall.

Where indications for thoracotomy exist it should be done soon after the abscess has clearly localized and liquified. Immediate operation is urgently indicated in case of very large abscess and in those due to a virulent type of infection characterized by foul sputum, rapid course and severe constitutional reaction.

A centrally situated abscess in contra distinction to a peripheral one is most suitable for adequate spontaneous drainage through an adjacent large bronchus. For like reasons postural drainage and bronchoscopic lavage are likely to be effective. The pleurae are not adherent, making pneumothorax collapse possible and safe and may be of help to control hemorrhage. Additional hazards attend the thoracotomy drainage of a central proximity of large blood vessels but is indicated nevertheless if satisfactory progress is not made with the other methods outlined.

Many abscesses lie in the midzone between the pleura and the hilum. If small the general indication is to treat them expectantly longer than if they were peripheral. If they are large they should be treated as though they were peripheral. Generally speaking, failure of other methods is a pretty clear indication for surgical drainage.

Diffuse empyema, due to perforation of the abscess wall, is a very serious complication on account of the usual virulence of the infection and the large surface for absorption. Such patients tolerate open drainage badly. Aspiration of the pus and saline solution irrigation by the closed method may be life saving.

Cautery extirpation in my opinion should be reserved to lesions localized to a portion of one lobe, in which localizing signs are absent or attempts at localizing the abscess with the aspirating needle fails. In some such cases the cautery will eventually open into a circumscribed abscess. In others a honeycombing of the lung by multiple small abscesses will be found. In the latter no other treatment except extirpation will offer any prospect of cure.

In chronic abscess extensive sclerosis, secondary abscesses, and complicating bronchiectasis greatly increase the difficulties and hazards of treatment and lessen the prospect of complete healing. Even if that is safely achieved the patient remains for life "damaged goods." The responsibility for the 75 to 90 per cent mortality in untreated or improperly treated cases and the increased operative mortality and imperfect result following late operation may rest with the patient but usually lies at the door of some physician who has allowed his patient, as he thinks, to defer the evil day of operation, when as a matter of fact he has allowed him to postpone the day of deliverance often until it is too late.

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DIGITALIS IN CLINICAL MEDICINE*

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Digitalis, since the days of William Withering, generally has been conceded to be the most important and the most valuable drug in the treatment of heart disease. In spite of the fact that digitalis has been used by physicians for 144 years, it is probably the most misused drug in the category of therapeutics today. The chief reason for this probably lies in the fact that we, as physicians, have not as yet thrown off the bonds of empiricism. We have been taught that digitalis is the sovereign remedy in heart disease, and we have been taught also its actions, its methods of administration, and certain dangers regarding its use. Our main impression regarding digitalis, and I use the word impression advisedly, is based largely on the experience that certain patients with heart disease are greatly benefited by the use of the drug. However, if we analyze our experiences with digitalis more fully, we soon recall the fact that frequently we have been puzzled when good results from the administration of the drug have not been forthcoming.

The beneficial effects of digitalis in heart disease result from the changes the drug produces in the various functions of the cardiovascular system. The effect of the drug on the heart is in part the result of direct action on the heart and in part of indirect action on the nervous structures that control it. Furthermore, the effect of digitalis on the diseased heart is very different from its action on the normal heart and on the heart of the experimental animal. In order to comprehend the action of digitalis on the impaired heart it is necessary to analyze critically the various actions that the drug may exert and also to comprehend fully the various underlying disorders leading to heart failure.

Considerable difficulty is at times encountered in definitely establishing the basis of heart failure and not infrequently failure results from a combination of conditions that must be determined in their proper relationships. The physician is often too willing to rest after he has satisfied himself that a failing heart is the cause of the patient's symptoms, and makes little, if any, attempt to identify the type of lesion. One of the most important factors in the misunderstanding regarding heart disease and its management has been this apparent indifference to determining the etiologic factor or factors responsible for the existing cardiopathy.

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The general use of the term chronic myocarditis has been a medical catastrophe, permitting the physician to classify any and all diseases of the cardiovascular system under a terminology that is vague and inadequate. The accurate interpretation of chronic myocarditis denotes inflammation of the myocardium resulting from invasion of microorganisms or from their toxins.

As a matter of fact, in view of more recent knowledge, chronic myocarditis is a relatively rare disease, except as it occurs in association with endocarditis. It has been demonstrated clearly, through exhaustive correlations of clinical and necropsy material, that the majority of the so-called cases of chronic myocarditis are not inflammatory conditions but are myocardial disorders resulting from hypertension, coronary sclerosis and hyperthyroidism.

I will attempt to show later that the success of medication with digitalis depends to a great extent on the accurate identification of the type of lesion.

STANDARDIZATION OF PREPARATIONS OF DIGITALIS

The chief problem in the choice of preparations of digitalis is to obtain one of uniform strength. The strength of a preparation of digitalis may be determined chemically or it may be determined biologically by its action on animals and by its action on the human heart.

The assay of digitalis by the chemical method was not found to be practical. It was dependent on the quantitative determination of digitoxin which was not constantly found to parallel the activity of the drug, owing to the associated effects of digitalin and digitalein.

The so-called frog method of assay has been used with satisfactory results. The standard dose for each gram of the body weight of the frog, is that which, when injected through the mouth into the anterior lymph-sac, brings the ventricle to a condition of permanent systole at the end of exactly one hour. Modifications of this method have been used.

Probably the most satisfactory method of standardization of digitalis is the so-called cat method of Hatcher(10-11). This was fundamentally designed for the assay of strophanthus but was found to be adaptable to the standardization of digitalis. The cat unit, as defined by Eggleston, is the number of milligrams of the drug, for each kilogram of body weight of the cat, which is just sufficient to kill the animal when it is injected slowly and continuously into a vein.

A modification of this method, by Rowntree and Macht, has proven to be satisfactory and is simpler of execution. They injected 10 cc. of the infusion of digitalis, for each kilogram of body weight of the cat; then, beginning five minutes later, they injected 1 cc. every two minutes thereafter until death occurred.

The standardization of digitalis by its action on the human heart has been investigated by Pardee(20). He has studied the changes which occur in the electrocardiogram, and the slowing of the rate of the heart, which follow administration of the drug. The test dose was varied in quantity, depending on the weight of the patient; the number of minims of the drug ranged from a half to a quarter of the number of pounds that the patient weighed. He concluded that the amount of drug necessary for the production of minimal changes was adaptable as a measure of the potency of the preparation. This method not only takes into consideration the degree of potency but also to some extent the amount and rate of absorption.

PREPARATIONS OF DIGITALIS

The preparations of digitalis most commonly used are derived from the leaves of *Digitalis purpurea,* although preparations from the leaves of *Digitalis lutea* have been used and are presumed by some(31) to have less tendency to produce nausea and vomiting.

A tincture of establishing potency and of known date of manufacture is one of the most satisfactory preparations of digitalis. Its administration is simple and conveniently permits changes in dosage.

The infusion is the oldest of the preparations of digitalis. It has been found to be an unreliable preparation when made by accepted methods, owing to its instability and to the great variations in its potency. Some pharmacists prepare the infusion from the fluid extract, which results in a product of a potency totally different from the official infusion and no longer comparable with it. An infusion made from the fluid extract has a greater digitoxin content than the official infusion. The relative value of the standard tincture and of the infusion of digitalis has been investigated by Weiss and Hatcher. By their method an infusion of digitalis was prepared that in all respects compared favorably with the standard tincture; and when it was kept in completely filled, hermetically sealed bottles it remained unaltered for nearly two and a half years.

The use of powdered leaves of digitalis in capsules is also a satisfactory method of administering the drug.

Digitalis may be administered intramuscularly or intravenously, although indications for the employment of these routes are rarely encountered(25). The methods of administration usually presuppose the presence of emergency in which the physician has had little or no time for the careful analysis of his patient. It is always possible in a case of acute heart failure that the basis of the condition might definitely contraindicate the use of digitalis. The intramuscular and the intravenous method may be employed with safety when the clinical status of the case is well established, but in the majority of instances it has little advantage over the oral route of administration. Pardee(21) has pointed out that the promptness in action which follows injection is more dependent on the large size of the dose given than on the greater promptness with which the drug comes in contact with the heart muscle. My experience has put me in full agreement with this statement.

Clarke, in a comparative study based on the rate of slowing caused by digitalis, showed that an effect was evident within three to four hours after intravenous administration in about four hours after intramuscular administration, and in six hours after oral administration.

There is no reliable evidence that proprietary digitalis preparations have any advantage over official preparations. There is little doubt that some proprietary tablets have considerably less potency and a fundamental objection to their general use is the inelastic range of dosage.

The use of compound tablets containing digitalis in combination with other drugs is to be condemned, as analysis of their constituents so often reveals their presence in so ridiculously small amounts as to be pharmacologically inactive.

ACTION OF DIGITALIS

In therapeutic dosage in man and in experimental animals digitalis has been shown to increase the amplitude of ventricular contraction by its direct action on heart muscle(5). Diminution in cardiac output, increase in tonicity, and diminution in dilatation have been demonstrated in normal dogs(9) but have not been clearly demonstrated in patients with heart disease. In a small series of normal men Burwell and his associates found that diminution in the output of the heart each minute and each beat occurred after the administration of from 1.4 to 2.7 gm. of digitalis leaf.

Slowing of the heart occurs under certain conditions. The vagus center is stimulated, frequently resulting in prolongation of the auriculoventricular conduction time. The most striking effect of digitalis is observed in auricular fibrillation, especially when the ventricular rate is rapid. Usually, dramatic slowing in ventricular rate occurs, partly from vagal stimulation and partly from direct depressant action on the auriculoventricular conducting system. Slowing of the heart rate in the presence of regular rhythm rarely occurs. Occasionally, in patients with edema and in children, some degree of slowing will occur.

Digitalis does not exert constant effect on blood pressure notwithstanding the belief that has existed regarding this question.

The diuretic effect that has been ascribed to digitalis is not due to stimulation of the renal epithelium, as formerly believed, but results chiefly from the improvement of the renal and general circulation.

ABSORPTION OF DIGITALIS

Studies dealing with the absorption of digitalis from the human alimentary tract have been carried on by several investigators(7-8-19-24). It has been shown that the galenical preparations of digitalis are absorbed with sufficient uniformity to allow the establishment of an average total therapeutic requirement of the drug, even for samples from various sources and of different activity. Eggleston and Wyckoff showed that a satisfactory average total dose expressed in terms of the cat unit of activity for each pound of the patient's body weight was possible when high-grade tinctures were used. The absorption of average tinctures was variable. High-grade tinctures in sufficiently large dosage revealed definite cardiac action within two to four hours after oral administration in man. Tinctures of less activity required five or more hours to manifest an effect.

It must be clearly understood that the first evidence of the action of digitalis does not imply full therapeutic effect, as this is rarely obtained in less than twenty-four to forty-eight hours and then only in larger doses.

ELIMINATION OF DIGITALIS

In the administration of digitalis the difficulty encountered at times in establishing a method whereby the patient is sufficiently held under the action of the drug without eliciting the toxic symptoms of overdosage is well known. The rate of elimination from the body or the degree of destruction in the body have been unknown quantities.

Pardee(18), in studying the rate of disappearance of digitalis from the body, found that approximately 0.1 to 0.2 gm. is lost in twenty-four hours. These results would imply that at least 0.15 gm. (1.5 cc.) would be the required daily dose necessary to maintain a digitalis effect after the full therapeutic effect had been obtained.

INDICATIONS AND CONTRAINDICATIONS FOR THE ADMINISTRATION OF DIGITALIS

The establishment of the diagnosis of heart disease is frequently considered the indication for the administration of digitalis. Such a criterion is absolutely fallacious and frequently results in serious difficulty. No method of treatment is attended by greater hazards than the indiscriminate and improper administration of digitalis.

The two striking indications for the employment of digitalis are the presence of congestive heart failure and the presence of rapid auricular fibrillation. This statement requires modification, as at times in rapid auricular fibrillation the administration of the drug must be cautious or, perhaps, it must be withheld. As previously stated, the establishment of a definite diagnosis of the type of lesion is of primary importance.

The exhibition of digitalis in acute heart failure, before the exact cause for the failure is determined, is not without danger. Cases of heart block, sudden failure from coronary occlusion, and cases of intense hyperthyroidism, especially if crisis is present or impending, are clear-cut contraindications to its use.

The presence of auricular flutter invariably demands medication with digitalis and often very large doses and prolonged periods of administration are necessary and are well tolerated. These observations suggest that perhaps the elimination of digitalis in flutter is more rapid than in other disorders of cardiac action.

In general, although this statement is not without exception, digitalis is more effective in young and middle-aged patients, especially in those with the heart failure of valvular disease, than in older patients with hypertensive, coronary or syphilitic cardiovascular disease.

There is no doubt that digitalis may be of benefit in cases of failure when the cardiac rhythm is regular. This fact was emphasized by Christian, and I believe has been the experience of all who have used digitalis.

My experience with digitalis has led me to be cautious in its administration to older patients, and has led me to give moderate doses over periods that have not been too prolonged.

One of the signs of excessive administration of digitalis is the appearance of premature contractions or extrasystoles. When due to digitalis, they usually occur paired with the normal beats and result in the so-called coupled rhythm. The presence of premature contractions, however, occurring in a patient who has not recently received digitalis, must not be considered as a contraindication for the exhibition of this drug.

Digitalis has little or no value in paroxysmal tachycardia.

The routine preoperative digitalization of patients with cardiac disease(6) is to be condemned as a routine practice. Several objections to this become evident at once. In the majority of instances, the preoperative administration of digitalis is unnecessary and involves therefore an unnecessary loss of time for the patient with its attendant financial burdens. As previously stated, many older patients do not tolerate digitalis well and if it is indiscrimmately given, they may be in a less favorable condition to meet operation. If it is recalled that little can be anticipated from the exhibition of digitalis except in cases in which heart failure is present or has recently been present, the chief contraindication to this procedure becomes evident. If heart failure exists, operative intervention is positively contraindicated and then only after cardiac function has been reestablished by proper treatment.

It is, therefore, my belief that the indications for the routine preoperative digitalization of patients with heart disease lacks scientific and clinical confirmation, and is a routine that should be discouraged.

METHODS OF ADMINISTRATION

As previously stated, the oral method of administration of digitalis is the one of choice. Many patients have failed to receive benefit because too little digitalis has been given and, less frequently, harm has resulted from its administration in excessively large doses.

Eggleston demonstrated the possibility of giving relatively large doses of the drug and his method of administration is known as the Eggleston method. The strength of the preparation employed is determined in "cat units" and from this the dosage is calculated in man. When the standardized tincture is used, the average requirement with the oral administration for the production of full therapeutic effect or minor toxic action is about 0.146 cc. for each pound of the patient's body weight. For example, a patient weighing 150 pounds would require 21.9 cc. of the tincture. The calculated total dose is given in divided portions: the first dose is half the total dose; the second, which is given six hours later, is half the remainder, and the third and fourth doses, given at six-hour intervals, are half the second dose.

Eggleston's method has been modified in numerous ways although the general principle of the method has been maintained .

These methods of administering relatively large doses of digitalis over short periods are not without objection. Their justification implies that the patient has been carefully examined and that the cause of the heart failure has been fully determined. After the total calculated dose has been given, means do not exist whereby the action of the drug may be modified, and notwithstanding various opinions, the onset of toxic symptoms is highly undesirable, and at times hazardous.

In the majority of cases of cardiac disease in which digitalis is indicated, sufficient time may safely be consumed to administer smaller individual doses over a longer period of time. Experimental studies have shown that full therapeutic effects, without toxic symptoms, can be obtained with standard preparations in dosage of 1.5 gm. (22 grains) of the leaf, or 15 cc. (225 minims) of the tincture. These therapeutic effects may be obtained even if digitalis has been employed in the same case; however, at least two weeks without digitalis must be allowed to elapse between the two periods of administration of the drug. The administration of 1 to 1.5 grains of the leaf or 1.5 to 2 cc. of the tincture three times daily is a satisfactory and safe method in most cases.

After the development of the therapeutic effect the problem of maintaining the action of digitalis without the onset of toxic phenomena presents itself. Numerous methods of administering the drug have been employed, but in general two plans are adaptable. Digitalis may be given daily, in doses sufficiently large to maintain its effect over relatively long periods of time; or larger doses may be employed and may be given for a few consecutive days each week with regular periods of withdrawal. In order to obtain satisfactory results, the method of administration must be selected to meet the needs of the individual case. In my experience, the second method has proved satisfactory. The individual dose, administered three times daily for the necessary number of consecutive days each week, is readily adapted to varying conditions.

The daily administration of ridiculously small doses of digitalis is without scientific support and should not receive encouragement.

It is important to emphasize the great discrepancies in dosage that may occur from the use of ordinary medicine droppers. This unreliable method is to be condemned as it has been a significant factor in the inadequate administration of digitalis. Some physicians have presumed that a minim of the tincture of digitalis as measured in a calibrated vial corresponds to a drop as delivered by the average medicine dropper. That this method is unreliable can be proved by anyone, by filling a calibrated vial to a given capacity in minims, using several droppers. Discrepancies of from five to fifteen drops will be observed. The position in which the dropper is held, vertically, obliquely or horizontally, also results in a discrepancy. Graduated vials are readily available and one should be prescribed with the digitalis; it is easy to instruct the patient in its use.

Under certain conditions, digitalis may be satisfactorily given by rectum(15-16-32). This method of administration is particularly applicable if nausea and vomiting are present from other causes. Essentially the same dosage used by oral methods may be used. In order to simplify this procedure, the total daily dose may be given at one time, with 20 to 25 cc. of water added.

The intravenous and intramuscular injection of digitalis has already been discussed and I wish to emphasize that the indications for this mode of administration are unusual.

TOXIC EFFECTS

Every physician should understand the toxic effects of digitalis. Certain symptoms of overdosage are well known: Namely, anorexia, nausea, vomiting and diarrhea. The occurrence of coupled beats as toxic manifestations has also received considerable emphasis, and likewise, the occurrence of partial or complete heart block. Other toxic effects are not so well known and merit considerable emphasis, owing to the fact that they often occur independent of such well known symptoms as nausea and vomiting.

Occasionally, during the administration of digitalis, paroxysms of tachycardia occur which have been known to terminate in death(28). The paroxysms have been identified as arising in the ventricles(8-23). The occurrence of these phenomena in the course of administration of digitalis, in a patient not hitherto subject to them, indicates a profoundly toxic effect of the drug.

The toxic effects of digitalis on the brain and certain nervous tissues are important to recognize, as the continued administration of the drug when toxic effects are present often results fatally. Prominent among these are disturbances in vision(1-12-13-14-17-22-27-29). They consist of dimness of vision, inability to focus the eyes, difficulty in the identification of objects, the presence of scotoma, diplopia, and so forth. Yellow and green vision are striking and often are alarming manifestations of intoxication with digitalis.

Toxic cerebral effects of digitalis are not as yet fully appreciated and are of utmost importance owing to their seriousness. In older medical writings, allusions are found to the so-called cardiac psychoses, some instances of which were probably the result of intoxication with digitalis. The first symptoms usually are restlessness and increased nervous irritability, and periods of disorientation regarding time and place soon follow. These manifestations are frequently supplanted by stupor, from which the patient does not recover. Visual disturbances may or may not be associated phenomena. Toxic cerebral symptoms may occur without the more usual signs of poisoning by digitalis. The onset of any of these symptoms clearly indicates immediate discontinuance of the drug, for the time at least.

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INDICATIONS FOR AND TECHNIQUE OF DUODENO-JEJUNOSTOMY**

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The indication for the procedure of duodeno-jejunostomy is to restore the function of the duodenum which has become more or less obstructed below the entrance of the common bile and pancreatic ducts.

The obstruction is always of the chronic, incomplete type, except when it is evidenced as a cause of and an accompaniment of an acute dilatation of the stomach; it is then complete; at least temporarily so. In very rare instances the obstruction may be complete when it is caused by an angulation of a gastro-jejunostomy anastomosis or a still rarer accident, the herniation of a gastrojejunostomy anastomosis into the stomach. In the first instance the obstruction is apt to be incomplete. In the second instance the obstruction is complete and of early, ominous consequences. Congenital malformations or non-fixation of the infantile mesentery may result in obstructions from local inflammations.

Congenital adhesions analogous to those of a Jackson's veil or Lane's bands causing kinks, may deform the duodenum, usually involving only the first and second portions and not interfering with the discharge of the biliary and pancreatic secretions. Inflammatory adhesions resulting from gallbladder infection or duodenal ulcer, not infrequently deform the first or second portions of the duodenum, but none of these is apt to produce interference with duodenal function except occasionally, when temporarily so much angulation is produced as to cause more or less obstruction which is reflected in stomach retention. These attachments are supramesocolic and are in evidence symptomatically, causing discomfort or pain while the stomach is emptying itself after a meal. Most of the dilatations of the duodenum, however, have their origin from sub-mesocolic obstructions. Aside from the occasional congenital bands which may compress the duodenum at its third portion causing more or less dilatation above, practically all third-portion dilatations are caused by the third portion being pressed against the third lumbar vertebra, where it is crossed by the mesentery and its contained blood-vessels.

An ascending colon which after rotation descends well down and is loosely fixed to the parietal peritoneum—even having a mesocolon—does, with the lower ileum, cause traction upon the mesentery. This traction results in pressure upon the third portion of the duodenum. It is exaggerated when the caecum is mobile and it with the lower ascending colon is filled with intestinal contents. Sometimes the accumulating effects of a general visceroptosis may be the determining cause of the production of damming-back symptoms referable to the duodenum.

Personally, I believe with Duval that a series of x-ray studies is the only reliable means of making a diagnosis of a dilated duodenum.

The symptomatology of incomplete obstruction of the duodenum as I have met with it is not definite, and positive, but increasingly suspicious as my opportunities for study have advanced. One of the greatest difficulties encountered is to differentiate the affection from gallbladder infection or gastric and duodenal ulcer.

There is a something about sufferers from chronic dilatation of the duodenum which to my mind is almost characteristic.

I have as yet not seen one of these individuals who was of a phlegmatic temperament. They have all been more or less of a nervous kind, several were neurasthenics. This condition is brought about by a chronic toxemia, resulting from absorption of the blocked duodenal contents. There is lassitude, more or less constant headache, often diagnosed as migraine, attacks of vomiting. And this vomiting is quite constand in kind, it is of large amount, bile-stained, and when examined both bile and pancreatic secretions are found. There may be intervals of weeks, or only days between attacks. In three of my patients the fluoroscope showed a reverse peristalsis—the barium could be seen passing from the stomach well down into the duodenum and then regurgitating back into the stomach. In cases I have seen there has been loss of weight and in several this was extreme. In one of my recent cases the symptomatology was so clear to me that I made the diagnosis in my office from

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**Presented before the annual meeting, Nebraska State Medical Association, Omaha, May 14, 1929.

the history and a visualization of the patient, and sent the woman to a radiologist for confirmation. The x-ray findings were positive even the reverse peristalsis. This woman had had her gallbladder and appendix removed. She had also had the rountine six weeks' diet and hot stomach-pack hospitalization. The opinion of the Mayo Clinic, usually none better, was that she was suffering "largely from chronic nervous exhaustion, etc." She had had there and here, an extensive x-ray, laboratory and physical study, with negative findings. She had had in addition special study by a well-known internist who recommended consultation by two neurologists, one of whom psychoanalyzed the patient. I cite this case to illustrate what I have emphasized in former papers on the Dilated Duodenum*, that physicians in general have given too little attention to this important subject. Text-books on internal medicine should no longer neglect it. Papers on the obstructed duodenum, written by surgeons, are to be found in the literature. Our own physicians and surgeons in this locality seemingly have overlooked this pathology with its striking symptomatology.

If the pyloric sphincter is intact, an acute dilatation of the duodenum will not be accompanied by an acute dilatation of the stomach, except only in a reflex way. However, acute dilatation of the stomach is nearly always a post-operative affection and when fatal as is most common, it is found post-mortem, complicated by an acute dilatation of the duodenum. This indicates that the pylorus was in a considerable degree at least, incompetent before the attack, which was brought about by an acute block of the duodenum from a definite mesenteric traction—a chronic condition becoming acute following operation. For the report of an acute dilatation of the duodenum secondary to a herniation of a gastro-jejunostomy anastomosis into the stomach, I will have to refer to a forthcoming paper of mine in the Archives of Surgery. The patient's life was saved by operation, a degastro-jejunostomy.

I wish to emphasize the fact that when studying symptoms referable to the upper abdomen, that not very infrequently pathology affecting the duodenum may be at fault.

TECHNIC OF A DUODENO-JEJUNOSTOMY

The anastomosis of the duodenum to the jejunum may be carried out either above or below the mesocolon. When made above the mesocolon the object is to overcome an obstruction in the lower second portion of the duodenum (Fig. 1). The hepatic flexure of the colon with its attached omentum is displaced to the left after freeing its border attachment to the duodenum. The jejunum is then brought up and anastomosed to the duodenum above the obstruction. It may be wise to make an entero-anastomosis between the two jejunal loops if there is evidence of a possible obstructing angulation at the duodeno-jejunal anastomosis. The obstruction may be due to a band; occasionally it is caused by a drag of the hepatic flexure of the colon, which with its ascending colon has failed to agglutinate after rotation. It, in this instance, compresses more or

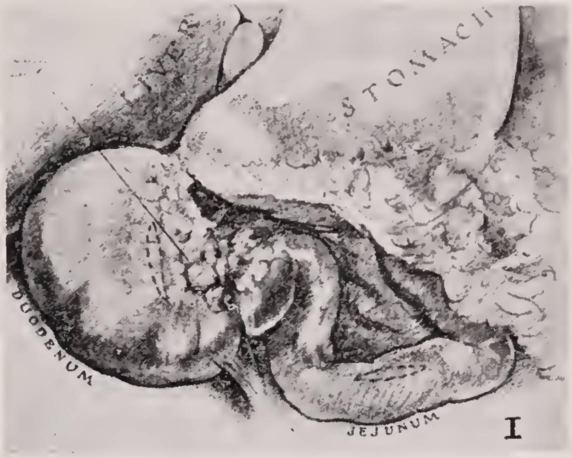

Fig. I. Supra-mesocolic dilated duodenum due to adherent mesenteric gland. Lines showing parts to be anastomosed. (After Kellogg).

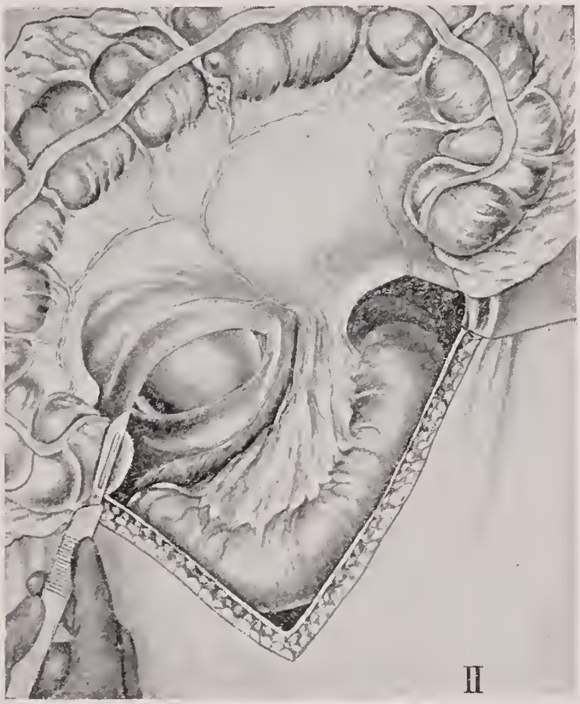

Fig. II. Bulging dilated duodenum sub-mesocolic. Division of the double fold of peritoneum of the mesocolon—upper jejunum.

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*Nebraska State Medical Journal, Vol. 13, No. 2, page 46, February, 1928; Annals of Surgery, September, 1928, page 576.

less of the right part of the third portion of the duodenum. The most common compression of the duodenum with resultant dilatation occurs below the mesocolon from a drag of the mesentery with its contained superior mesenteric artery. The dilatation is in evidence as the omentum and transverse colon are lifted upward by a bulging forward of the duodenum, which is covered by the double fold of peritoneum, "the two ascending or posterior layers of the great omentum."

In order to make the anastomosis (Fig. II), the double fold of peritoneum is divided so as to avoid the blood vessels supplying the transverse colon; this fold, lightly attached to the duodenum covered by its own peritoneum, is freed by gauze stripping so as to expose the dilated duodenum sufficiently that it may, with or without the use of rubber covered forceps (Fig. III), be anastomosed to the jejunum at about the same distance from its upper end as we do when carrying out a gastro-jejunostomy. The technic is the same (Fig. IV). Again it must be remembered that the duodenum is not always situated as described in our anatomies. The loop may be found at the second lumbar vertebra, sometimes at the fifth, and its position will influence its motility and the ease with which it can be manipulated. However, the doing of a duodeno-jejunostomy is never as easy of accomplishment as that of a gastro-jejunostomy. The duodenum is not so mobile as the stomach, hence the anastomosis in some instances must be done with the parts not outside of the abdomen but partly within. In such instances it is difficult to use clamps and if used they must be curved. I have, as have others, successfully overcome the drag of the lower ileum, caecum and rather mobile ascending colon causing dilatation of the third portion of the duodenum by suturing intra-peritoneally the caecum and lower ascending colon to the right abdominal wall. Bloodgood has practised resection in such instances—this seems too radical a procedure—a duodeno-jejunostomy would produce the same result and be much safer.

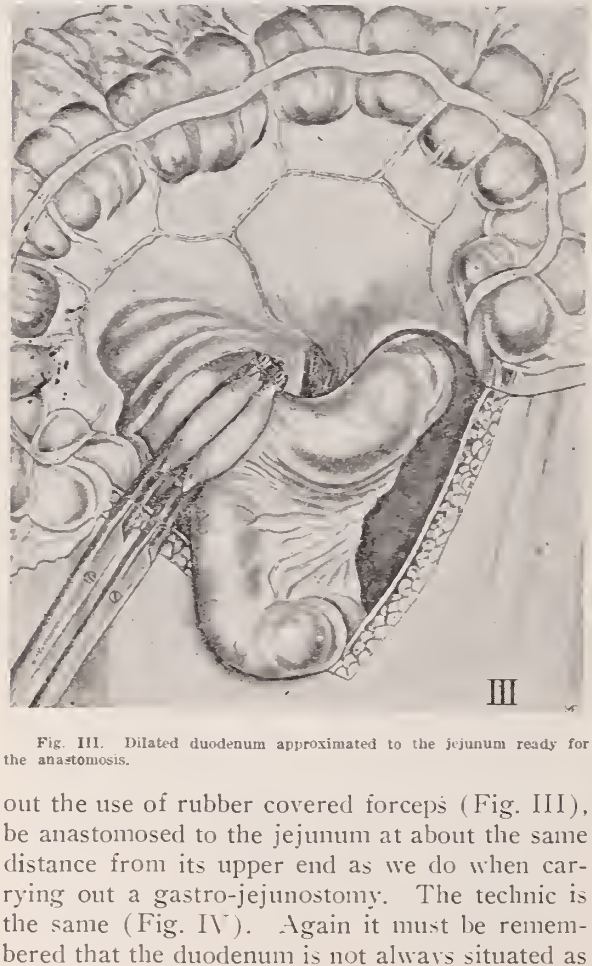

Fig. III. Dilated duodenum approximated to the jejunum ready for the anastomosis.

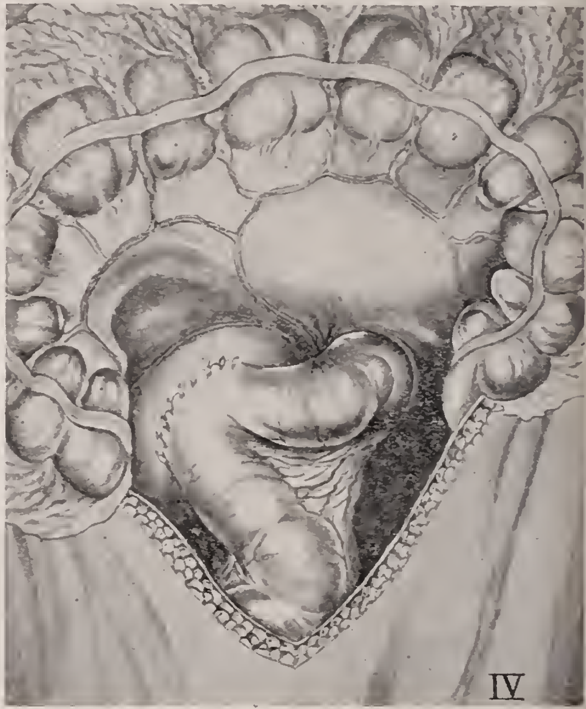

Fig. IV. Anastomosis of jejunum to duodenum completed—duodeno-jejunostomy.

Unquestionably many sufferers from an obstructed duodenum are being treated for gallbladder disease, or have had the viscus removed. The appendix usually has been taken out, and in some instances unfortunate operations upon the pelvic organs of women have been undertaken—all from false premises. Is it to be wondered at that frequently such individuals may be classed as neurasthenics, and form an unappreciated part of the clientele of internists, particularly those specializing in hepatico-gastro-intestinal diseases and in neurology.

The general physician should give the subject of the obstructed duodenum closer attention, insisting that when the radiologist is studying his cases presenting symptoms referable to the gallbladder or to a gastro-duodenal ulcer, that he should be mindful of the possibility of a chronic obstruction of the duodenum causing the symptoms of which the patient complains. Only one of the patients I have operated on has been referred to me by a physician, the dilated duodenum recognized. Several had had irrelevant operations performed upon them. My surgical colleagues will become interested when internists more often diagnose the condition and appreciate how valuable surgical efforts are when diet, laxatives, mechanical apparatus and therapeutic calisthenics fail.

To sum up—

What of the results of operation done for the obstructed duodenum? In my experience they are most gratifying. My patients have all been improved, several restored to complete health. The operation of duodeno-jejunostomy is more difficult than the routine gastro-jejunostomy, but if deliberation and technical care are exercised offers no special difficulties.

THE KETOGENIC DIET IN THE TREATMENT OF EPILEPSY*

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The problem of the epileptic has been with us for some centuries and, except in those cases of a distinctly traumatic origin, is still with us. All kinds of measures have been advocated for the relief of this distressing condition and, while some of them have for a time seemed to be of value, practically all of them have eventually failed and have been thrown into the discard. For years the massive doses of bromides were used to control the seizures and, while they accomplished their purpose, after a fashion, they so depressed the mentality of the patient as to almost make the remedy worse than the disease. The injection of rattle snake venom was one of the methods advocated some years ago and one of our large pharmaceutical houses first came into prominence by raising diamond backed rattlesnakes for the production of the venom to be used in the treatment of epilepsy. As we no longer hear of it, I assume that it, too, has gone the way of many million other epileptic remedies and is only remembered through the fact that it was once used in this connection.

There have been many operative measures advocated for the relief of this condition and they range all the way from simple circumcision to removal of the transverse colon. For a brief time, colonic removal was heralded as a discovery until it was observed that most epileptics have a cessation of their seizures after almost any major operation. So it, too, went into the discard.

In recent years, the "als", luminal, veronal, amytal, allonal and so on through the list have shown about the best drug control over the convulsions and are now in general use. It might be well to call your attention to the fact that all of these drugs are ureide derivatives and that they all contain the C^2H^5 radical, as that fact will have a distinct bearing on the progress of this paper.

Of all the recent procedures, the ketogenic diet seems to me to be as rational as any and while it is yet young, it bids fair to become one method whereby we can expect some degree of permanent improvement with the possibility of a cure. It has been criticized extensively, both favorably and unfavorably, but personally, I am inclined to the view that its harshest critics have not given it the consideration that it deserves in the type of case to which it is applicable. When one looks at the unfortunates who are classed as epileptics, and who, up until now, have had little or nothing offered them in the way of either relief, modification or cure, it is certainly well worth the effort to try and do something outside the beaten path than to sit idly by and offer nothing save palliation.

There are a few general principles in the use of the ketogenic diet that must be considered before a ketosis is adopted as a method of treatment. There are those epileptics who have as a demonstrable causative factor, skull injuries, either at birth or at some subsequent time, either with or without a depressed fragment of bone. Such a case is a distinctly operative case and if there has been a depressed fragment and it has been present for any length of time, there would probably be enough actual brain tissue degeneration for the continuance of the epilepsy and such a case is in no way suited to the ketogenic diet. There will be found others that show other anatomical and pathological defects and, until those defects are remedied, there can be nothing in the way of a dietary or medical regime that will be of the slightest assistance. We had one case in which there was an active infection of the ethmoid cells and upon the curettage of the cells and the cleaning up of the infection, the convulsions disappeared so that there was in no way any necessity for a ketogenic diet. The cases to which the ketogenic diet is applicable must be those of the strictly idiopathic type or one in which there is no anatomical or pathological defect demonstrable. I believe that a frontal sinus of moderate severity and long standing can be the foundation for an epilepsy and I also believe that old antrum and mastoid infections can do the same thing so all conditions of that nature must be eliminated before placing the patient upon a ketogenic diet.

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*Read before the annual meeting Nebraska State Medical Association, Omaha, May 14, 1929.

Presuming that we have such a case and especially of the *grand mal* type, as in my hands the ketogenic diet has been more effective in *grand mal* than in *petit mal,* how will we go to work to produce a ketosis?

First the basal caloric requirement of the patient must be determined. It can be reckoned by the Wilder method, the Boothby and Sandiford, the DuBois or any other standard method. When that requirement is found then comes the building of your dietary schedule. Always figure your requirements as for an active person. Not one at rest nor partially at rest but one who is active. There can be no benefit derived from a ketosis by merely ingesting enormous amounts of fats into the individual and in no way providing for all the utilization possible. The production of a ketosis is based upon the imperfect combustion of these fats to the point that diacetic acid appears in the urine. The patient is not ketosed when he shows acetone. He must show di-acetic acid.

The Mayo Clinic lays down five requirements for the construction of a ketogenic diet and as they are sensible and sane, I will quote them: First: It must contain sufficient calories to keep the weight normal and allow for growth. Second: It must provide sufficient protein to build new tissue and to replace the broken down cells. Third: It must provide minerals and vitamines to meet the requirements of the body. Fourth: It must furnish sufficient bulk to provide for a daily bowel movement. Fifth: It must provide for a sufficient amount of water.

With these rather simple requirements before you, you can construct your diet to meet them. You can build it up in the usual way, allowing four calories for each gram of protein and carbohydrate and nine calories for each gram of fat. A table of food values such as the Bryant and Atwater tables can be procured from the Superintendent of Documents, Washington, D. C., giving the chemical composition of practically all of our American foods and they are authentic and correct. If one has nothing else, he can use the tables giving the protein, fat and carbo-hydrate content of foods that are used in the construction of a diet for a diabetic insofar as their limitations will permit.

As a general rule it is necessary to keep the patient under close observation for three or four weeks. Hospitalize if necessary, and where the patient is a child, the person who is to cook and prepare the food, calculate the diet and supervise its use, should be present all of the time in order that she may learn exactly how it is to be done. In this, it differs but little from the ordinary method of handling a diabetic that is being sent home on a calculated diet.

With some of the cases, it is necessary to put them on a starvation period, giving only orange juice or black coffee until the di-acetic acid appears in the urine. With others, one can try out the prescribed diet at once and if the ketosis appears and stays, the starvation period will not be necessary. As a concrete example, let us assume that we have a patient, a child, whom we wish to ketose and whose requirement is two thousand calories per day. We will also assume that the patient weighs seventy pounds or thirty-one kilograms. We wish to give one gram of protein for every kilogram of body weight so our protein requirement would be thirty-one grams which would produce one hundred twenty-four calories per day. By subtracting 124 from 2,000 it would leave us 1,876 calories to be made up from fats and carbohydrates and, in my experience, they should run about ten fats to one carbo-hydrate. In this instance that would amount to 20 carbohydrates and 200 fats per day. When worked out, this would bring the total calories to 2004 which is close enough for all practical purposes. In the event that the patient becomes a bit nauseated by the diet, you may have to put him to bed and feed a little orange juice until that period has passed.

A quick way to estimate the calories required is to multiply the weight in pounds by 25 for children and by 16 for adults. In the instance mentioned above, the basal requirement would be somewhat under the one given as it would amount to 25x70 or 1,750 calories. I rather like the larger figure, especially in dealing with children as when you deprive the average youngster of any type of food, it must be made up in quantity along some other line. It is always of value to keep the patient active and if it can be done, he should begin to show di-acetic acid in the urine within a two or three day period. When the di-acetic reaction is good and shows plainly, the patient should be taught to run his own urine and insist that he do it every day. He will then get an interest in the case that could be obtained in no other way. Gerhardt's test is simple, can be done by anyone, and all that is required is a test tube and some ten per cent ferric chloride. Have the patient put five or six cc of urine in the tube and then add the chloride drop by drop. The clouding due to the precipitation of the phosphates with the first few drops should be shown and explained and he should easily learn to identify the bordeaux red color that appears in the tube, beginning at the bottom and coming to the top. This color will disappear on boiling and it is a wise thing to boil the urine occasionally as there are other things than can produce this color but they will remain after boiling while the di-acetic will not.

After the ketosis is established and while the patient is still with you, it is a good plan to experiment a bit and see just how low a ratio of fats to carbo-hydrates will keep the patient showing di-acetic acid. It allows for more latitude in the diet and if one wishes to intensify the ketosis, he knows just where to start. The conduct of the diet will require considerable planning on the mother's part or whoever is to supervise it, but it is not nearly so formidable as it sounds. The meals must be as near alike in their fat, protein carbo-hydrate ratio as it is possible to have them. It would never do to have the patient eat all of his carbo-hydrate allowance at one meal and have none with the other two. One of my patients who was on a daily allowance of 24 carbo-hydrates, 32 protein and 280 fats began to appear out of ketosis. His mother assured me that he was getting his exact daily allowance as it had been figured and nothing more. I had her bring down a week's meals and found that the patient was getting 18 of his carbo-hydrates for breakfast and the other six for dinner and supper. As a result, his breakfast threw him out of his ketosis every day. We changed his meal ration to read, breakfast 8-10-90, dinner 8-11-100, supper 8-11-90, and the ketosis returned and has remained without difficulty. Too many people figure the daily allowance of each type of food and distribute it through the day as pleases their fancy rather than as the condition requires. Any competent dietitian should be able to instruct the average mother or nurse within the three weeks period to carry on the diet without difficulty. I have a little lady who never completed the eighth grade at school and her ten year old son is one of my ketosed patients at this time. Give her a Bryant and Atwater and your fat protein and carbo-hydrate allowance and she will figure you a perfect day's meals with no mentionable variance in the ratio and will not miss her total caloric requirement ten calories either way. So any person of average intelligence should be able to carry on the diet without difficulty after they have left the supervision of the physician.

If the patient has had seizures over a long period of time, it will probably be necessary to keep him on small doses of luminal or luminal-sodium for two or three months in order to completely control the convulsions. Personally, I greatly prefer the luminal-sodium as it does not hit the patient so hard and they awaken with a much clearer head than when the plain luminal is used. The dose is best given at night and when the sodium salt is used the difference is marked in the time required for them to clear up.

Apparently there are many things that will throw a patient out of ketosis aside from the dietary error mentioned before. One of my patients was in and out with no palpable reason. We checked everything that we could imagine might be the cause and one day found him chewing gum. Upon his ceasing his gum chewing activities, the ketosis remained and we had no more difficulty. Another used a brand of tooth paste that was too highly sweetened and upon his changing his brand, his ketosis was permanent. These patients must be kept in a state of ketosis or you are wasting both your time and theirs. The diet is a bit laxative but you may have to guard against constipation and if your patient does become constipated, sugar free-agar-agar, mineral oil, epsom salts or any cathartic of that kind will do. Most of the ordinary laxative pills contain altogether too much sugar to be given to a ketosed patient.

The patient must be made to understand that this diet is not for a month, but that it is apt to run for eighteen months or two years or even longer. They will need considerable moral courage to withstand many of the inconveniences connected with it and the disappointment at having an unexpected convulsion. They may get discouraged and want to stop and call it a failure but when they get to the point where they can actually see that the attacks are becoming fewer and fewer and that they are not losing consciousness during them, they will stay with it. One of my patients, a boy of ten, who had been accustomed to having two or three attacks a week before we ketosed him slipped along for nearly three months without an attack. One morning he had one. He felt mighty bad about it but when we talked it over with him, he told me that he knew he was better or he would have lost consciousness during the attack and so was going to continue to carry on.

After the patient has been convulsion free for four to six months, it is advisable to add five grams to his daily carbo-hydrate allowance and keep it there for a month. If at the end of that period, he is still convulsion free, add five grams more and as time goes on and he still remains without seizures, add five grams every month until he has a ratio of 1 to 5 or 1 to six. When you have arrived at that point, you are about out of the woods as your patient's meals will not differ greatly from the meals of those about him.

One of the agreeable surprises will be the way that children will take to the dietary restrictions when they once learn what is expected of them and what the diet is expected to do for them. As I mentioned before, I try and get them to take a personal interest in their affairs by having them run their own urine, calculate their own diet and at times make the effort to prepare their own food. The child that is poorly disciplined or is accustomed to having its own way about everything will not do well except away from its parents and away from home. I have had one of that type and finally told his parents that if they would leave the child for six months and stay away from him during that time, we might be willing to try and do something for him but under other circumstances, we would rather not make the effort. They took him away with them and I have seen or heard nothing concerning him since he left. It is absolutely useless to try and do for that type. It is equally true with those that are mentally deficient. In my own experience, I have had no very good results with adults. Dr. C. J. Barborka of Rochester, Minnesota, in an article in the *Journal of the American Medical Association,* the issue of July 14, 1928, presents some very interesting figures on a series of adult cases which he treated with the ketogenic diet. In thirty-two cases of idiopathic epilepsy in adults, the diet controlled the attacks in seven, definitely improved them in twelve and did little or nothing for the other thirteen. It is but fair to say that the thirteen did not all adhere rigidly to their diet and their ketosis was a sort of hit and miss affair. Even that shows a better percentage of results than has been attained with any other system so it is worthy of consideration from that angle if from no other. In my own experience, the adult cases that could be helped just did not seem to come my way.

I have placed seven children and two adults on the ketogenic diet. The adults were a disappointment but we did note that the dosage of luminal required to control the convulsions was markedly diminished during the period of their ketosis. One of these cases presented a very interesting syndrome which may mean something and again, it may not. While she was ketosed, her epilepsy definitely improved and her dosage of luminal was cut down. After she had been ketosed for five days she showed the most beautiful urticaria that one could ever see. Upon reversing her diet, the urticaria disappeared but her luminal had to be increased to control her seizures. I have heard it intimated that when the last chapter on some of the metabolic disorders is written, there is a possibility that it will show a distinct relationship between the urticarias, anaphlaxes and things that are now regarded as sensitizations, to epilepsies and other kindred disorders.

Now as to the "why" of the whole thing. Wilder's original opinion was that while in the ketogenic state, the di-acetic acid acted as an anesthetic and the convulsions were controlled in that manner. I believe it, but I do not think that he went quite far enough. To me personally, I believe that we try to so modify the metabolism of the individual cell as to cause it to produce and to continue to produce an anticonvulsion principle, whatever that may be. That may be a reason why the diet seems so much more effective in children than in adults. The child is still producing cells to add to his physical bulk as well as replacing the worn out ones. The adult, whose physical bulk has been attained, is not making any more cells but is merely trying to replace those that are worn out or have been destroyed. To put it another way, in the child the metabolic habit of his cells has not yet been established and in the adult it has. In following out this idea, let us take the drug armamentarium now in general use in controlling the convulsions. The most successful ones are those of the "al" group of which luminal is a representative. All of these drugs are from the ureide group and they all contain the ethyl or C^2H^5 radical. For centuries we have known of the affinity of the ethyl radical for nervous tissue and we can almost say that any drug containing that radical will have its effect upon the nervous tissue of the individual. As nervous tissue is mostly made up of fats and fat like substances with water, it should follow that any hypnotic should be soluble in both fats and water to attain its greatest efficiency. The results of research in synthetic chemistry show that an hypnotic has an efficiency directly proportional to its solubility in fats and water. So then our ideal hypnotic is something soluble in both fats and water and containing the ethyl radical for not only its use as a vehicle but for its synergistic action upon nervous tissue. We all know that a sudden drop in the blood cholestrol of an epileptic patient is certain to be followed in a very short time by a convulsion. The principal habitat of cholestrol is in the white substance or the medullary substance of nerve tissue so, could it not be possible that when the drop in blood cholestrol takes place, the cholestrol in the nerve tissue is drawn upon and that our hypnotic which must be fat soluble has nothing to take up the drug and a convulsion ensues? As I mentioned before, the "als", which are representative of the drug control of the seizures are all ureide derivatives and the ketogenic diet is one which would naturally increase the urea in the individual and we all know that with the imperfect fat combustion within the individual we get large amounts of the ethyl radical, is it not possible that our effort is directed to making the individual cell produce its ethyl radical, and its ureide by influencing the metabolic processes through the type of food furnished it?

If we take the physiology of fat metabolism and take the stearic acid group as an example, we will find that it is deprived of its carbon atoms by oxidation and that with the excessive intake of fats, and the consequent acidosis of the individual, the carbon atoms that should ordinarily combine with oxygen and produce CO^2 are compelled to take up with the excessive number of hydrogen atoms and in that way produce our C^2H^5 which is utilized both as a nerve depressant and as a vehicle for the ureide derivative whose menstrum must be both fat and water soluble. This looks all the more reasonable as all of our drugs controlling the convulsions contain the C^2H^5 radical and some urea derivative so even if we fail to control the convulsions by the ketosis, we markedly cut down the amount of drug necessary to control them. From that basis we can figure that our ketosis does not produce quite enough of the anti-convulsion principle and that all that is needed is a bit of help from the outside which we give as a drug and which drug is essentially of the same chemical composition as the natural product of the individual cell in a ketosed person.

I believe that the individual cell can by the training, brought about by the change in the metabolic chemistry of the individual, be made to respond to changes in the diet of the patient. The cell adapts itself to its environment. If that were not true, the Eskimos would be in a state of ketosis all of the time as their diet is one of the best ketogenic diets known. We know, however, that that is not true. One of our own men from Omaha lived among them for more than a year and could report no such effect. Lieb and Tolstoi lived upon an Eskimo diet for more than two months and at the end of that time were normal in weight and what was even more impressive, neither their bloods nor urines showed the pathology that one would expect to find in a person unused to such a diet for any great length of time.

I wish to mention, briefly, three cases from my own group and they will be those which have been on the diet the longest and which have shown the best results:

The first is a lad of ten who had had the nocturnal type of epilepsy for approximately a year and a half before coming under my care. He had been in the habit of having three or more attacks per week. They usually came after one o'clock at night and were typical. The cry preceding the convulsion could not be mistaken. We were able to find no anatomical nor pathological defects during his physical examination so we selected him for a ketogenic diet. He ketosed easily and by September 15th, was excreting diacetic acid. As a precautionary measure, we gave him one grain of luminal sodium at night. Prior to this time he had been taking some sort of nostrum which contained about twenty grains of bromides to the dram. He was taking six drams per day. On September 17 he had a typical attack. He had no more until December 17th when he had one in which he did not lose consciousness. He had no more until March 31st when he had another in which he did not lose consciousness. I now think that this attack was due to the fact that I took him off his luminal sodium March 1st and that he was not quite ready for it. He has had no more up to this time, May 1st, 1929, but is taking one-half grain of luminal sodium at night as a precautionary measure. His mother is the lady referred to in the first part of this paper and as she handles his diet without difficulty and maintains a close watch over the lad, I think that I can see a recovery for him and that in the not too far distant future.

Another is a girl of thirteen. Her habit was to have about six convulsions per month. At the time that I saw her she was but twelve and had never menstruated. We ketosed her and she was passing diacetic acid about the first of June, 1928. On June 9th, she had a convulsion, and again on August thirty-first. In both of these she was unconscious but the one on August thirty-first was her last one. She began menstruating in January of this year and has had no seizures since the one in August. From October, 1928, she has had no luminal nor other drug to control the convulsions. The establishment of her menstrual function may have had something to do with the cessation of the seizures but the fact remains that she dropped from approximately six per month to two in six months before this function was established.

The third one is a boy of fourteen. He had been having both grand and petit mal attacks for six years. He had had about everything done to him except colonic removal, and all for the treatment of his epilepsy. He was also on this bromide preparation and was taking six drams per day. We ketosed him and gave him one and one-half grains of luminal sodium at night. He has had no more grand mal attacks but still has two or three attacks of petit mal during the day. They are, however, very fleeting, not amounting to more than a momentary confusion and that only lasts in the neighborhood of two or three seconds. He has been on the diet for five months and I cannot help but think he will be markedly benefitted thereby. He now rides his bicycle on errands for his mother, goes to school and acts in most ways as other boys except that he must eat at home.

In all of these cases one thing has come to my attention and that is the distinct improvement in the school grades of these patients. The boy first mentioned was getting along with 81, 84, 79 and grades of that sort and now he has none below ninety. The others have shown the same thing but in not quite so marked a degree.

As a kind of a summary, I want to say:

That my own experience with the ketogenic diet in the treatment of idiopothic epilepsy has been very favorable and I am inclined to the view that as it comes into greater use in properly selected cases its usefulness will be recognized and greatly extended.

Even if the patient has to continue to use some drugs for the control of the seizures, it is still better than anything that we now have and it should be tried in the type of cases to which it is adapted.

The diet is simply and easily calculated and can be carried on by anyone of average intelligence after a brief training period.

The patient must never be out of a ketosis, once it is established.

The patient must be active as there is nothing to be accomplished by merely stuffing enormous amounts of fats into him and not burn them to any degree as the production of the ureide and your ethyl radical depend on the imperfect combustion of fats and their subsequent reduction into the anti-convulsive principle.

I believe that the "why" of the diet lies in the chemistry of metabolism in the individual cell and in the modification of the metabolic habit of the individual cell so that the anti-convulsion principle will be produced within the body of the patient.

DISCUSSION

RODNEY BLISS, M. D. (Omaha): I am sure we should feel indebted to Dr. Stark for giving us his experience of seven cases in ketogenic diet. We know epilepsy has been a bugbear for generations. We know we never arrived anywhere until about the time the barbital preparations came on the market. We know many individuals, both youngsters and grown-ups, obtained great relief from barbital radicals.

The ketogenic diet is apparently another way of furnishing a barbital radical and another way of furnishing ether-like substances which produce the necessary depression of the central nervous system which decreases or leads to the cessation of these convulsions. Until we know something better, or until this ketogenic diet is tried out in a large series of cases than it has been in the last three or four years, we will not drop the use of barbital derivatives. Of course, Dr. Stark does not suggest we should drop them.

We need a chemist to discuss Dr. Stark's paper. I am not competent to tell him whether the C_2H_5 radical is the substance which produces depression of the central nervous system. I do not know. We see in literature that it is generally thought that this acid radical—the ketogenic radicals—do produce this effect. Whether acting upon the individual cell as the doctor says, of course, nothing but time and further work will tell us.

A pediatrician should discuss this paper, because the ketogenic diet does so much more good in youngsters than in adults. The results in adult petit mals are very unsatisfactory. It seems to me all of us run across cases of petit mal and are very much discouraged by attempt to relieve them with anything except a moderate amount of barbital derivatives. I think we should try this out. I would agree with Dr. Stark these people should be under close observation and hospitalized just as is our diabetic, and I see no reason why they cannot be taught to work a ketogenic diet just as we work out the diet of the diabetic. So that I think this paper should carry the impetus to all of us to try out the ketogenic diet in cases of this sort. Personally I feel grateful to the doctor for his excellent paper and the excellent results of his cases.

FLOYD CLARKE, M. D. (Omaha): I certainly think Dr. Stark has given us enlightenment on this diet. My principal difficulty with children has been to get them to stick to it. They get tired of it. If they go to school, the children offer them candy, and sooner or later they are off. Dr. Stark has given one or two points I think I can work out. One is to let them examine their own urine.

I have had interesting experiences with the ketogenic diet. I think Dr. Peterman of Rochester—the pediatrician—was the first man who started it. He is an excellent man. Dr. Stark said it is easy to reckon. I am not a good mathematician, but my wife is a pretty bright sort of woman. She reckoned this ketogenic diet. We spent two or three weeks in finding out how to get this diet. Finally we got a little child started on it. It took a good deal of brain matter on my part. Finally I wrote Dr. Peterman. He had just such a patient as this woman who got out a diet along this line. He sent me the original copy. I gave it to a fellow in Council Bluffs who had convulsions with epilepsy. He had his stenographer write it off. Now I can start off by telling how many grams I wish of each. It works out well and is quite satisfactory.

My experience has been much the same as Dr. Stark's. It is of value in grand mal. As to complete cure, I question it. They call me up and tell they have had convulsions. In petit mal it is of some value. They can go to school and resume the same sort of life as the normal individual. If they fall off the diet, they have more convulsions. I can depend upon the test of the urine as to whether or not that youngster has taken any food he should not take. If it comes up with nonketosis, I am positive something has happened—that the youngster has had some candy.

I think the boys and girls who have it should receive lots of encouragement and attention. I agree about the improvement in the mental condition—whether grand mal or petit mal. It improves more under diet than without it. As to whether a complete cure is effected, I am wondering.

Dr. Stark, (closing): I had hoped to stir up more discussion, especially on the chemistry of the thing. I believe in working out this sort of thing you will come back to a strictly chemical proposition of cell metabolism and the metabolic habits in children. The mental condition improves.

I am glad the doctor spoke about Mrs. Clarke, because my wife knows more about working these diets than I do. She can figure a diet in five minutes than would take me all day. Candy and gum and all such things with no carbohydrate content can be purchased for these children. I have eaten some of the candy. It is not anything to get "steamed up over", but it is candy. I have chewed some of the gum. The same thing is true. If the average kid can pick up something labeled "candy", he is like the man from Vermont. If you cut a piece of bread three-cornered and label it "pie", it is all right with him.

Don't put a child with an old mastoid or frontal sinus or infected tonsils on a diet until you correct the anatomical defects in that child.

Dr. Barborka has records on 141 children who went through Rochester. In 85, their convulsions had been definitely controlled by placing them in ketosis and keeping them there. I hope our people in Nebraska will try it out and work with it, because you do get results.

HEART DISEASE IN CHILDREN

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In presenting this subject it is not my purpose to outline, or classify and describe the various cardiac abnormalities which we all meet in practice; nor do I wish to call attention to rare conditions. Much less is it my purpose to attempt to give instruction concerning the treatment of heart disease.

I wish to direct attention for the moment to heart disease in general, but to point out special features as they concern us in dealing with heart disease in children. I wish to emphasize the importance of some of the problems connected with its control; to point to some of the things which have been accomplished, and to glean therefrom both fact and theory to stimulate our interest and to fire our enthusiasm, so that we may be encouraged to carry on in the crusade for health.

I shall take the liberty to quote freely from subject matter in books, magazines and pamphlets; for in them I have found most of what I wish to say.

The American Heart Association is rendering a real service. This organization, through its department of research, has gathered statistics and facts, and has then disseminated information which should be studied by physicians and by the laity as well; so that all might have a better understanding concerning the present situation as regards heart disease.

Following are a few statements of facts which should be generally known:

"Heart Disease is responsible for more than 175,000 deaths annually in the United States.

"It kills more men and women than tuberculosis, pneumonia, or cancer.

"One out of every seven deaths is due to heart disease.

"It is estimated that in the United States two out of every hundred persons have heart disease.

"120,000 of the men drafted for service in the World war were rejected because of heart disease.

"If present conditions continue—one in every five of population living at age 10 will die of heart disease."

Dr. Borden S. Veeder writes: "Statistics show that cardiac disease is frequent among children and it is estimated that the total number of cases in the United States is nearly a million."

Rather a dark picture results when these facts are brought together.

Those of us who are especially interested in children, take comfort in the knowledge shown by statistical facts, that whereas between the years 1914 to 1924 the percentage changes in heart disease death rate shows an increase for all ages of 12% ; there is a decrease of almost 25% in those ages between birth and 15 years.

In general, heart disease deaths are on the increase. Why this increase? In other words, what are the causes? Numerous causes come to mind. The complex and to some extent abnormal living conditions of our time, with all that those words imply, must be considered. Social and economic problems connected with the present day activities subject the whole organism to stress and strain for which evolutionary change has not compensated. The circulatory system, because of the variety of external influences operating upon it, has perhaps failed to a greater degree than has, say for instance, the nervous system.

Habits of intemperance and improper modes of living predispose the heart to damage. Excessive use of coffee, tobacco and alcohol, or too violent exercise at irregular periods; insufficient rest, overeating, etc, are contributory factors. In children malnutrition must be mentioned.

But when all is said and done, infections still play the most important role as causes of heart disease. Particularly is this true in children.

From statistics examined it would appear that the prevalence of heart disease in school children is silghtly less than is the prevalence among the population in general. However, when we consider the children who are suffering from cardiac damage which is too great to permit their attendance at school, the prevalence is probably as great or even greater among all children of school age, and younger.

The problem of heart disease in children differs from that of heart disease in adults. This is true even when we exclude from consideration congenital heart disease or those specific definite entities which are peculiar to the child only. It is true when we consider lesions which are anatomically identical with those found in the adult.

The reasons for this difference are numerous, but for the most part they may be included 1st in characteristics peculiar to the heart in childhood, and 2nd, conditions influencing children generally.

Children are more susceptible to infections than are adults. Their protective mechanism from the standpoint of immunity reaction is not so well developed. Children's hearts are more susceptible to damage by infections than are hearts at any other age.

Periapical dental infections are frequent focci in adults. The child's heart is rarely deranged by infection from this source.

Nutritional deficiencies need rarely be considered as influencing the heart in adults, whereas in children they may play an important part.

Of interest in this connection is some of the work which has been reported by foreign writers.

Agduhr(1), for instance, carried on a series of experiments and illustrated the supposed deleterious effect of cod liver oil on the heart. He was inclined to believe that prolonged dosage of infants with cod liver oil may favor the development of cardiac disease in later life.

Later Höjer(2) checked up on these experiments and concluded that Agduhr's diets were deficient in other vitamins, and that overdosage of cod liver oil was necessary to cause changes. Out of this work came the theory that an excess of vitamin A may react with and inactivate some of the vitamin B present.

At the recent meeting of the American College of Physicians held in Boston an evening session was devoted in large part to a symposium on Deficiency Diseases. Their importance is being recognized more and more and their relation to heart disease in children is important.

As was stated before the most frequent cause of heart damage is infection. In children the most frequent source of this infection is the upper respiratory tract and more especially the tonsil.

I am not unmindful of recent reports which tend to show that tonsillectomy influences heart disease very little if at all. I do not advocate wholesale tonsillectomies, and yet there seems to be sufficient evidence to justify the position that all infected tonsils should be removed, not only as a prophylactic measure, but especially where heart damage already exists, in order that that particular heart may be protected from further damage.

What is said of tonsils should also be said of other demonstrable foci of infection.

Rheumatism in a child may be very difficult to recognize. Its prevalence is probably greater than we realize.

J. F. Halls Dally(3), writing in the British Journal of Diseases of Children states that on examination of a large number of children in Wigan District, Lancashire, 29% showed evidences of rheumatism.

Rheumatism should be in our minds constantly when we are confronted by such manifestations as growing pains or joint pains, sore throat, polyarthritis, chorea or subcutaneous nodules; and we should not forget that the heart alone may be infected; in other words we may have a carditis without evidence of rheumatic disease elsewhere in the body.

Not every case of rheumatism results in heart disease, but carditis is frequently associated with the initial attack of rheumatism. In the paper by J. F. Halls Dally, above referred to, I read the following statement which offers food for thought. It deals with the etiology of rheumatism. "On the part of those who are not wedded to the infective view as self explanatory there is a consensus of opinion as to certain disposing and evocative factors in rheumatism such as are comprised in the influence of environment in its broadest applications."

Whether rheumatism is caused by a germ, or whatever the specific cause may be, we should do all in our power to protect children from it. We should certainly protect them from those infections for which the specific cause is definitely known.

Immunization against diphtheria with toxin-antitoxin cannot longer be said to be experimental. As time goes on other specific immunizing agents will be perfected and we should stand ready to utilize them.

The temptation to write on treatment is great. However, I shall refrain except to enter a plea for more careful supervision of damaged hearts over longer periods of time, especially through and immediately following convalescense. In carditis it is so hard to gauge the activity of the inflammatory process.

In children the prognosis in heart disease is apt to be different than in the adult. Repeatedly we see decompensated hearts in juvenile patients and are tempted to give a bad prognosis. In an adult the same degree of decompensation would probably demand a bad prognosis, but the child's heart seems to be capable of exerting much greater reserve power and we have records of such patients who, after eighteen months or two years, are able to pass the most exacting physical tests.

In the battle against heart disease much has been accomplished. I have time to mention little. One outstanding bit of work among the multitude of accomplishments by individuals and organizations is the little volume by a committee appointed by the Heart Committee of the New York Tuberculosis and Health Association. The title of this book is "Criteria for Classification and Diagnosis of Heart Disease". Its purpose, as stated in the preface, is the effort to make the study of heart disease more effective by establishing, 1st, uniformity of nomenclature and, 2nd, uniform criteria for using the nomenclature. As physicians interested in the subject we have in this booklet a very helpful guide even in arriving at a definite diagnosis in a given case.

Much has been done in interesting departments of health, boards of education and other similar organizations in the subject of heart disease control. I wish I could take time to call the roll of individuals who have worked so faithfully on problems connected therewith.

Much still remains to be done. Perhaps the greatest problems aside from those which are purely scientific, are problems which concern the organization and education of physicians and laity.

Such organization and education will help to bring about better control of etiological factors, will lessen the number of damaged hearts, will help to shield those already damaged, and will bring about conditions whereby suitable occupation may be provided for individuals who are partially incapacitated by cardiac damage. It will save individual suffering, prolong lives and lessen the financial burden of the community caused by indigence.

Surely this is a worth-while program.

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DISCUSSION

C. SWANSON, M. D. (Hastings): We know heart disease is a serious condition in any individual, and more especially, I think, in a child, because besides the immediate danger of the acute condition, if the child recovers from that it places a functional handicap on that child the rest of his life. Because of the inactivity and handicap of physical development they are under, it places an added hazard to any subsequent infections they may get in after life and in acute illnesses of other things later on, especially of respiratory diseases.

Dr. Wegner has brought out these statistics showing the prevalence of heart disease and the mortality rate. I think a summing up of these statistics has a tendency to give us a broader viewpoint and keener realization of the extent of the condition. As the Doctor pointed out, children are more susceptible to cardiac lesions because their protective mechanism is not so well developed, and also because of the friablity of the tissues.

In the last number of the Journal of the American Medical Association there is an article by Dr. Kane of Philadelphia, who has done considerable work with school children. He has a series of ten thousand cardiac cases in the Philadelphia schools. He says in the United States during 1924 more deaths between the ages of ten and fourteen were due to heart disease than any other cause. One reason might be because of the anatomical nature of the heart. Its relative size in the infant is greater than in later life, and about the smallest the seventh year. It is rapid during the first three years, and slower from the third to the tenth year, and most rapid from the eleventh to the fifteenth year. In this period of rapid growth, it is more susceptible to the onslaught of infections, and more damage may be done for this reason. There are other reasons to be taken into consideration. All of them must be thought of.

H. B. HAMILTON, M. D. (Omaha): I am sorry there was not more time to hear this paper and consider the importance of heart disease. Dr. Wegner stated 26 per cent recovered without any damage to health. That leaves 74 per cent in which there is either morbidity or mortality. It is astounding when we consider the prevalence and seriousness of the heart question. Dr. Wegner stated infections are the most important things. That must be a true statement of fact. Among them, rheumatism must head the list. I am glad he mentioned unusual indications of rheumatism in children. We have been thinking we may expect to find a red, swollen, tender joint in rheumatism. Such is true in adults, but not necessarily in children. Growing pains and muscle cramps are signs of rheumatism in the child. Children may have rheumatism with much fewer manifestations than adults, and they are of great importance. I think all children with evidences of rheumatism should have their tonsils and adenoids removed, despite the fact apparently the repetition of rheumatic attacks is in some statistics shown to be not very much less frequent. Tonsils and adenoids are not the only tissues in which infection may originate. We must also consider the sinuses about the nose and throat.

Another important thing is the directing of these children into activities which will not throw unnecessary burdens on the heart. This has been one of the most valuable things the cardiac society is doing.

In the treatment of ordinary attacks of rheumatism, even though its manifestations are minor, I am of the opinion salicylates are not given in sufficient doses. One school believes they relieve the pain, and the other believes they are specific. I am inclined to lean toward the latter view. They are stomach disturbers, and when we give a proper dose we get stomach disturbance. It is overcome by giving such doses as are well borne by the stomach and giving the remainder by rectum. I have given forty grains of salicylates by rectum in four ounces of starch solution. If ringing of the ears takes place, it is during sleep. You can give any reasonable doses in that manner. I do not believe soda is necessary. I have never yet seen a case of acidosis develop from the use of salicylates. I think the doses are ordinarily too small. If we give them in that manner, we will do more for these patients.

FLOYD CLARKE, M. D. (Omaha): I was glad, as Dr. Hamilton was, to hear Dr. Wegner talk about rheumatism. We should bear in mind Dr. Small's serum. Under his supervision some of the pharmaceutical houses have marketed a serum for use in acute articular rheumatism. I think possibly with some benefit. Small's statistics speak for it.

Regarding the use of cod liver oil, I think it is a point well chosen. I question whether it would cause rheumatism. Sometimes I think the manufacturers, because of their constant advertising, are impressing us, and we are giving too much cod liver oil. I do not believe every child who comes in should have cod liver oil.

I have had two cases of bacterial endocarditis. The youngsters develop temperature, with a high pulse rate, and are quite sick. The prognosis is fatal.

Another point is whether or not to tell the patient he has heart disease. If you tell these little girls twelve to fourteen they have heart disease, it makes quite an impression. With an ordinary murmur, whether definite in type or not, it is questionable whether or not we should tell these patients they have heart disease. I came from a patient yesterday who was told he had heart disease. He awakened from a sound sleep, troubled about this condition. I question the advisability of always telling the patient.

H. B. LEMERE, M. D. (Omaha): One manifestation Dr. Wegner mentioned that seems to me fails to respond to the removal of tonsils and adenoids is polyarthritis. They are cases which originate usually from infection from the nasal sinuses. The pessimistic feeling in regard to treatment of the nasal sinus in children is so great that nothing is done for these cases except instilling a few drops of argyrol into the nose, which merely tends to sterilize the discharges of the sinus. The damage from nasal sinus comes not from the nasal sinus, but from the infected discharge into the pharynx itself so it does some good. But this pessimistic attitude in regard to the treatment of the sinus I do not think should exist. Much can be done for these youngsters by way of treatment.

As far as I can make out, the treatment I advocated years ago is still most effectual. Such treatments consist of contracting the nasal mucous membranes to a certain extent. It is of no benefit if no attempt is made to clear the nose and establish open drainage, because contraction does not necessarily mean better drainage of the sinus. In addition to this, one must have flushing of the nose to expel the thick mucous which will otherwise lie dormant in the nose. One must also instruct these patients in nasal hygiene so that they can learn to expell this mucous and it does not reach the nasal pharynx. These processes are slow, and patience and persistence are necessary; but where the parents have persisted, I have seen good results by attention to proper nasal sinus condition. I feel one should not be pessimistic in regard to it, and not merely instill a few drops in the nose and expect results. An attempt should be made to instruct the children and parents in proper hygiene as to the proper cleansing of the nose.

DR. WEGNER (closing): I am grateful to the men who discussed this paper and for the additions which they made to the subject matter. Dr. Swanson's additional statistics were of great interest to me. Dr. Hamilton's statements as to treatment are important. The question seems to have come up in regard to cod liver oil. Of course, this work was done on test animals. I did not mean to convey the impression it caused rheumatism. If that impression was conveyed, I am at fault. There seems to be a condition in children wherein the excessive doses of cod liver oil caused fatty deposits.

I do not agree with Dr. Clarke as to keeping heart disease secret. I believe we will get better co-operation from children, as a rule, if we tell them the truth in every instance. I realize there are a great many different ways in which to convey this truth, depending upon the condition, and particularly upon the individual child. I agree there has been a great deal of harm done by merely saying to the child, "You have heart disease." But if, together with this statement, we will convey to the individual child the knowledge that by proper treatment and care this heart disease may be overcome, or if not entirely overcome, it does not condemn that child to a life of invalidism, I believe we are doing better by simply laying the cards on the table and trusting the child to make the best of it.

I am glad for Dr. Lemere's remarks concerning the sinuses and the inadequacy of our treatment in many instances. We feel by far the largest majority of sinuses we see in children clear up almost spontaneously after removal of tonsils and adenoids. Where they do not, there is another large per cent that will with proper treatment, including in some instances internasal irrigation.

LINES TO A SECRETARY

By Martha Hawkins

There's someone whose smile is unchangingly sweet,
Whose graciousness warms me whenever we meet.
She's clever at figures and keeping accounts,
And her skill at collecting almost amounts
To a species of genius. So tactful is she,
That my debtors are, strangely, still friendly with me.

Her voice is as calm as the zephrys of May,
A comforting smoothness when nerves want to fray.
Her patience is endless with ladies who sigh,
And men who are cross, and babies who cry.
She deals with them all in the gentlest way,
And thinks of exactly the right thing to say.

She keeps the necessities close by my hand,
She schedules the day, she's everything planned.
My calls are in order, my records the same—
And now have you guessed at this paragon's name?
Well, she's my secretary!

—From Medical Economics.

THE VALUE OF X-RAY FOR THE RELIEF OF PAIN*

ROY W. FOUTS, M. D.,
Omaha, Nebr.

No doubt every one doing x-ray diagnosis of the gastro-intestinal tract has noted the frequency in which patients returning for the twenty-four hour examination, have remarked that "they feel better since yesterday than for some time", or some similar statement.

For some time I was given to explain this on the basis that we were perhaps dealing with a hyper acid stomach and the barium being slightly antacid, the acidity of the stomach had been neutralized to a degree, thereby allaying the irritation and relieving the pylorospasm, which is the cause of the pain in this class of cases.

One frequently hears the remark, that they do not feel quite as tender or sore, in the epigastrium, as on previous examination.

A follow-up on a few of these cases has led me to believe that some definite relief is experienced for a time following this procedure. This is particularly true in those cases where there is epigastric tenderness, or marked pylorospasm observed, at the time of the stomach examination, whether or not there is gastric retention beyond the six hour period.

Having had a little "inside information" in the way of personal experience, I am convinced that most of the pain associated with gastric or duodenal ulcer, particularly the latter, is due to pylorospasm. Also that many cases of epigastric distress and pain are the result of pylorospasm, the primary cause of which may be wholly extra-gastric. In other words the pylorospasm is simply an incident and is caused by the irritation of the gastric hyperacidity. The hyperacidity in turn being the result of a deranged secretory innervation of the stomach which may receive its stimulation from some point, fairly remote.

That the relief obtained in these cases is not due to any neutralizing of the hyper-acid gastric juice is proven by the fact that it continues for some time after the stomach has emptied. That it is not due to any astringent action of the barium may well be assumed, as barium sulphate is practically inert. That the psychological element, that is so often argued, does not enter into the case may likewise be accepted, as the patient does not have the idea that he is coming for treatment, but only for diagnosis. The only other factor for consideration is the biologic action of the x-rays.

That x-rays have an antispasmotic and analgesic action is no longer a question for debate among those who have had opportunity to observe along this line. Their action toward the abatement of the paroxysms of pertussis is well known. Likewise some chronic asthmatic experiences temporary relief from its application. Relief from *tic douloureux* is many times most gratifying. By this same action, I believe, the painful pylorospasm, previously referred to, is relieved for a time.

At first thought one may be inclined to think that the dose delivered during an examination is relatively small and not sufficient to produce any therapeutic effect. Our experience in treating other conditions is that only a small dose is required, and when the sum total of x-rays administered during a gastro-intestinal examination is obtained, it will be found to closely approximate that necessary for an analgesic dose for other conditions.

There is another factor to be considered, the value of which, if any, I do not know, but I believe is worthy of thought. It may have some application in radiation therapy elsewhere in the body. It is this: When x-rays pass through a substance with an atonic weight of forty or more, secondary rays are generated in addition to the primary rays.

While secondary rays have less penetrating power, they are present in a larger quantity and markedly enhance the local biologic reaction of the ray. Just how much these may enter into the case we do not know, but certainly to some extent. Whether this biologic effect is an inhibitory action on the secretory mechanism of the stomach, thereby lessening the hypersecretion, or whether it is solely the antispasmodic action of the *pars pylorica,* is a question that might be worked out by those who have access to the indigent patients of our charity institutions, where the stomach tube may be employed *ad libitum.* Suffice it is to say that temporary relief has many times been observed in this class of cases.

While it has never been proven that x-rays have a specific action on nerve tissue, the relief from pain observed in some cases that are regarded solely as sensory nerve disturbance, causes one to wonder if there may not be some selective action upon the nerve root, or upon the nerve itself.

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*Read before the annual meeting Nebraska State Medical Association, Omaha, May 14, 1929.

Relief from sciatica, *tic douloureux,* neuritis and neuralgia in any location, occurs sufficiently frequent as to commend the x-ray as a choice of treatment, rather than the usual stock hypnotics and anodynes.

Those nerves situated in bony canals or having to pass through bony foramen, that they may be compressed by an inflammatory swelling, more frequently yield promptly to treatment. Treatment should be directed at these points as well as along the course of the nerve.

In sciatica and intercostal neuralgia, the nerve roots should receive attention first, and then along the course of the nerve if it is tender and painful on pressure.

The pain of spondylitis and likewise hypertrophic arthritis, is lessened in most cases and many times relieved if treatment is persisted on for a few weeks.

The pain of herpes zoster is sometimes relieved within the day of treatment. Both the lesions and the spinal cord should be radiated.

More cases of pruritus, when not due to diabetes, hemorrhoids, constipation or some other lower bowel pathology, will yield to x-ray than all other forms of therapy combined. In this most distressing condition due to a hypersensitiveness of the skin, relief is usually prompt and in the majority of cases fairly permanent.

Corns and callosities of the feet treated by x-ray are sometimes rendered painless in twelve to twenty-four hours.

While the pain of most of the above mentioned types of cases is caused by nerve root irritation, or the nerve itself, there is another class of cases where the pain is more the result of pressure or irritation of the nerve endings. I refer to furuncles and carbuncles. Here the pain is caused by the pressure, due to the lymphocytic infiltration incident to the inflammation. If x-rays have a specific action for any type of cell it is the lymphocyte. It is well known that lymphocytes are extremely sensitive to radiation and are destroyed quite rapidly by exposure to the rays. It is, therefore, not surprising that many inflammatory processes are rapidly and markedly influenced by irradiation. The relief from the pressure of these hyperplastic cells affords prompt relief from the pain.

One might think that this lymphocytic infiltration is nature's "coffer damming" of the infection and that any procedure that tended to destroy and lessen the number of white blood cells, was irrational and unscientific, and perhaps a dangerous thing to do, as it might lead to a further spread of the infection.

Such is not the case. I have never seen an unfavorable progress of a single case irradiated during this stage. Relief from pain may be confidently expected and it is usually rapid and almost complete analgesia. I have seen cases requiring three or four hypos of morphine in twenty-four hours previous to irradiation, never take one following treatment. I believe that more than 50% of boils and carbuncles may be aborted if treated early, and decided benefit derived if treated before complete necrosis has occurred.

It is in the following class of cases that x-ray first definitely proved its value as a pain relieving agent. That of tumors, benign and malignant. The diminution or almost complete abolition of pain is often times noted before any change in the size of the tumor is demonstrable.

This would again suggest that there may be a more or less selective action on the nerve endings, and that the pain may not be caused altogether from the pressure of the tumor. As a rule the relief is rather prompt, usually following the first application of the ray which is generally an hour in this class of cases. Unfortunately the ray is not 100% successful as a pain eradicator, but it is successful in a sufficient per cent of cases, as to constitute an indication for its use, not only for its inhibitory action on the tumor, or to cause its complete regression, but also in advanced cases where the relief from pain is the only object of the treatment.

There is no known method that cures any very large per cent of malignancies, but I believe it may properly be said of the x-ray that single handed, it is capable of doing more toward the complete eradication of a malignant growth, or failing in this, it may inhibit for a time the progress of the malady, and in the end bring the unfortunate victim down to a more peaceful and less painful death, than all other agencies combined.

This is not to be understood as advocating x-ray to the exclusion of surgery, radium, or electro-coagulation, or any combination of the four that might be indicated in any particular case. But x-ray, on account of its pain relieving qualities has served well, in this capacity, many a poor suffering mortal after other known methods have been exhausted.

The condition of many patients is such that nothing more can be accomplished. Relief from pain is one of the chief duties of the physician and many otherwise hopeless cases can be given such relief by radiotherapy.

DISCUSSION

E. W. ROWE, M. D. (Lincoln): I should like to say a few words about Dr. Fouts' paper, because I have been interested in the analgesic effects of roentgen rays for a long time. Conservative workers have been slow to report their observations for fear of a lack of evidence to explain the phenomenon, but now abundant evidence of a scientific character from many workers confirms the beneficial analgesic effects of x-ray in many conditions. Dr. Richards and Dr. Carter of Canada, Drs. Des Jardines and Ford of the Mayo Clinic and other workers in America, France, Germany, and England have gone very extensively into the fuller explanation of the beneficial effects of the roentgen rays for producing analgesia.

I have observed the same things mentioned by Dr. Fouts. Almost daily my patients who are in for prolonged gastro-intestinal study speak of the relief they have experienced during the examination. I am not sure of the explanation.

For malignant growths and metastasis there is ample clinical and pathological proof of the destruction of the cancer cells and the cessation of invasion. That there is some action on the nerves and nerve roots is gradually being accepted. Uterine, breast, and prostatic cancers are prone to metastasize to the spine and joints. Many patients can be kept in comparative comfort through the terminal months of their existence.

Aside from malignancies there is quite a list of lesions in which greater relief may be experienced when other measures fail. Furuncles and carbuncles, neuritis, herpes zoster, diabetic neuritis, Tic Douloureux, parasthesias of nervous origin, osteoarthritis, chronic mastitis, tuberculous peritonitis, abdominal and pelvic inflammations—these make up a list worthy of recognition.

Patients are usually treated by the roentgen ray for the disease and secondarily for the relief of pain. In many of these conditions it may be used primarily for the relief of pain. Frequently roentgen rays are not applied because of ignorance of the modus operandi. The action of the rays is now better understood by consulting roentgenologists. Patients should not be advised to have roentgen treatment merely for the psychic effect. No procedure brings the profession into greater discredit. Charlatanism is as unethical as in other branches of medicine. Also in referring a patient for the relief of symptoms it might be well to call the consultant and ask him what he can do for a patient with such and such a history.

In closing, I wish to emphasize that Dr. Fouts has called our attention to the wider uses of the roentgen ray and to the greater possibilities for the relief of pain and suffering. He is not pleading for the emperical use of the roentgen ray, but for the rational application of a physical modality in good therapy.

W. L. ROSS, Sr., M. D. (Omaha): I enjoyed Dr. Fouts' paper very much because in a clinical, practical way it suggests the therapeutic use of x-ray in the way of relieving pain. I cannot better emphasize it than to read from an article in the Nebraska State Medical Journal under date of September, 1922.

"Some of the effects of the x-ray other than to kill cancerous cells are:

1. To destroy lymphoid cells.
2. To relieve pain.
3. To relax spastic muscular action.

The first effects, namely, the destruction of lymphoid tissue, have been taken advantage of to a large extent in the treatment of cervical adenitis. More recently the first effect has come into prominence like a sky rocket in the treatment of diseased tonsils.

The first, second, and third effects of the x-rays are applicable in the treatment of appendicitis.

The order in which all three of these effects are the most pleasing and satisfactory to the patient are:

1. The relief of pain.
2. The relaxation of the spastic condition of the caecal orifice of the appendix, which allows drainage to take place normally.
3. The obliteration of the lumen of the appendix by destruction of the lymphoid cells, thus causing atrophy of the appendix."

I was glad to hear Dr. Fouts emphasize whereever you have an inflammatory action of the lymphoid cells, it is absolutely safe to use x-rays to relieve pain and diminish inflammation by destroying lymph cells. He emphasized the fact on first thought you might think that was a dangerous thing to do. He afterwards said there is absolutely no danger in that. Hundreds of cases have amply proved there is no danger of producing infection by relieving the pain and reducing acute inflammation of the lymph cells. You really take away the thing by which they are further propogated and multiplied.

Dr. Fouts also emphasized you often relieve pyloric spasm by the use of the x-rays. It will have the same effect in the appendix and allow drainage to take place. So you have as an excuse for using x-ray in appendicitis the relief of pain and also destruction of the lymphoid cell from which the germs derive their nourishment.

I have read this to show the use of x-ray for the relief of pain has been in existence for some time, and, as Dr. Rowe stated, while the effects have been observd for a long time, many users were afraid to mention the fact for fear they could not substantiate it on a scientific basis. Lots of knowledge has been derived from empirical experience and afterwards scientifically explained.

In Dr. Rowe's discussion, I was gratified to have him mention the x-ray was being used for the relief of pain in chronic mastoiditis. Here you have a bony substance to penetrate and an abundance of secondary rays produced. As Dr. Fouts explained, your secondary rays are more destructive to the lymphoid cells and have greater analgesic effect upon nerve endings. I have been using it for some time upon acute as well as chronic mastoiditis and know of nothing that acts so speedily as that. Boils and carbuncles have been treated for some time.

I want to emphasize the use of x-ray for the relief of pain in herpes zoster. The earlier in the attack it is used, the easier you will curtail the extent of the eruption and also modify the annoying burning pain that follows if you do not use it in time. If you commence after the herpes is well established, then your analgesic efforts are not so positive and do not prevent your suffering for months.

I want to emphasize the fact in any of the acute forms of infection that are benign it has a wider, more positive effect than in malignancy. It does ease the pain, and as Dr. Rowe had the boldness to state, it does kill the cancer cells. In all forms of sinusitis, I have used it with great success—for instance, in acute maxillary sinus it relieves pain quicker than anything I know of.

L. W. RORK, M. D. (Hastings): Most x-ray workers have been conservative in broaching the relief of pain with x-ray. I am glad Dr. Fouts in his presentation was as conservative as he was. This condition can spread to a wide area. I had a case I should like to report in this connection of a young man who had an amputation of the humerus in the upper third, and at the end of about a year he began to suffer extreme pain, complaining of the sensation in his fingers. We naturally supposed we had the condition of a neuroma which had developed in the stump. Pressure on the stump gave him no distress. Pressure in the axilla over the plexus produced this distress in his hand and fingers. It had been necessary to keep him under opiates. The pain was practically constant and extreme. Now, contrary to the usual technique, it was necessary to use rather heavy administration over the axilla, leaving the stump alone. I am very much gratified to say that the individual secured comfort; that it was possible to discontinue all analgesic medicinal agencies, and at the end of five months he has had no recurrence of any of the distress connected with the symptoms.

DR. FOUTS, (closing): I appreciate the fact, generally speaking, that physicians, and particularly surgeons and some of the fellows higher up in the profession, are not given to look with much favor upon a presentation of this kind. Such has been the case in times past. I have attempted to be very conservative, and in deciding my opinions in connection with the cases I have seen, to be quite sure relief was positive and the result of my x-ray treatment. You can never say when you treat a case in one particular way it might not have gotten well anyhow. You do not know that an individual who is treated with one treatment for pneumonia might not have recovered with another form. When you see a patient with a carbuncle under morphine, requiring it four times a day to get relief, and see him take no morphine after exposure to the x-ray, and see it repeated a number of times in a number of different cases, you begin to think there is something to it. It is simple experiences of that kind that have led me to make those assertions. I am convinced more than 50 per cent of boils may be aborted if x-ray is given early. I believe infections generally may be improved if exposed to the x-ray.

You ask me why. I do not know. A certain teacher had taught her class this poem:

"How doth the little busy bee
Improve each shining hour,
And gather honey all the day
From every opening hour."

The next day she said to Johnny, "Do you know how doth the little busy bee?"

Johnny said, "I don't know. I only know he doth it."

That is my position in connection with the relief obtained by the application of x-ray in the type of cases we have mentioned.

THE MEANING AND SCOPE OF ORTHOPEDIC SURGERY*

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I am often asked the question, "What is orthopedic surgery?"; and not infrequently people express surprise when they learn that orthopedic surgery is not confined to treatment of the feet. Orthopedic surgery deals with the diseases, deformities, and injuries of the bones and joints, and their associated structures, namely the muscles which move the joints, and the nerves which carry the impulses or messages from the brain and spinal cord to the muscles. In Italy this branch of surgery is called the surgery of the disorders of the organs of locomotion; and the term, though not complete, is perhaps clearer than the word "orthopedic." Because this is a subdivision of general surgery, the orthopedic surgeon is first trained in general medicine and surgery; and he becomes a specialist only after he has supplemented his general training with further years of study and experience in this particular field.

In the earlier days of this specialty almost the entire attention of the orthopedic surgeon was given to the care of the crippled child, but through a natural development the orthopedic surgeon's work has been widened to include the treatment of all diseases and injuries of bone and joint and associated structures regardless of the age of the patient. The rapidly expanding growth of our manufacturing and mechanical industries, the ever-increasing employment of heavy machinery on the farm, and the universal use or mis-use of the automobile are all factors which produce an appalling number of serious injuries to bone and muscle, and place additional and urgent demands on the services of the orthopedic surgeon, whose training has especially fitted him for the treatment of such injuries. It is convenient, therefore, in this discussion of the scope of orthopedic surgery to divide the topic arbitrarily into, first, the orthopedic surgery of children, and second, the orthopedic surgery of adults.

In the case of children orthopedic surgery deals primarily with the correction of deformities present at birth or due to crippling disease after birth. Some common examples of congenital or birth deformities are club foot, dislocation of the hip, and the twisted or wry neck. All of these deformities can be completely cured provided treatment is given early enough; and in many cases no open or cutting operation is necessary, correction being obtained by so-called "bloodless" or manipulative operations. The most common crippling disease occurring after birth is infantile paralysis or, to use the longer medical term, anterior poliomyelitis. Lay people often confuse this disease with spinal meningitis, which is an entirely different disease and one which very rarely is followed by disabilities demanding orthopedic treatment. Infantile paralysis appears from time to time in epidemic form attacking large numbers of children in one locality, though more frequently, indeed almost every year, the dread disease presents itself in less numerous, often widely separated, instances. Most cases occur in the late summer and early autumn months. Though the disease has been positively proven to be infectious, the particular germ or micro-organism which causes the disease has not yet been identified. Gradually some progress toward the control of the disease is being made, the most recent advance being the use of serum taken from a patient who has recovered from the disease. However, orthopedic treatment still remains indispensable, and orthopedic treatment must be instituted in the very beginning of the disease if the best possible results are to be obtained.

Chronic joint disease, particularly tuberculosis, is another example of crippling disease developing after birth. The most common sites of bone tuberculosis are the spine, the hip, and the knee, though any joint may be involved. Here again orthopedic treatment affords a cure or at least a very gratifying amount of improvement provided treatment is given early enough and is faithfully followed for a sufficiently long time. No one has any magical medicine to rub on; there is no mysterious electrical treatment, nor any skillful replacing of a displaced vertebra that will bring about a cure over night. But if the rational treatment is perseveringly and faithfully carried out a good result will be obtained in the majority of cases.

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*Radio broadcast over Station WOW, March 9, 1929, on the Creighton University Educational Program.

Families having insufficient financial means to defray the expense of long-continued private treatment should not hesitate to bring their crippled child to the orthopedic clinics which are maintained in most of the large cities by the medical schools and teaching hospitals. People living in and about Omaha are fortunate to have here two such free orthopedic clinics, one at Creighton University College of Medicine, and another at Nebraska University College of Medicine. And supplementing the advantages of these clinics Omaha possesses the Hattie B. Munroe Home for Convalescing Crippled Children which is strengthening the hand of the orthopedic surgeon by affording a congenial place for nursing the crippled child back to health and strength after the initial period of surgical treatment, which may be called the acute hospital phase, has been passed. And in Lincoln the state of Nebraska likewise provides a special hospital for the exclusive care of orthopedic cases admission being obtained by application to the superintendent through the family physician.

Adults are not immune from crippling diseases; and the care of such diseases, particularly certain types of paralysis and chronic bone and joint disease will always constitute a very important part of the work of the orthopedic surgeon. But, as mentioned earlier, orthopedic surgery in the adult has grown simply on account of circumstances to concern itself in an especial manner with the care of accidental injuries, because in the majority of instances such injuries involve the bones and their overlying structures or parts.

The introduction of the x-ray has given the surgeon a means of exact diagnosis in bone injury, and has enabled him to check his setting of broken bones more accurately than was formerly possible. Furthermore, the development of the aseptic or clean method of surgery has made direct open operation on bone a safe procedure in the hands of experienced men. And the result of these innovations has been the raising of the standard of fracture treatment above that which satisfied our predecessors of two generations ago. The general enactment of employers' liability and workmen's compensation laws has similarly influenced the technic of treatment by directing new attention to the economic seriousness of bone and joint and muscle and nerve injuries. Besides being good surgery, it is good business from the standpoint of the employer and the insurance carrier to treat a patient, let us say with a broken thigh bone, so that he will return to work in the shortest possible time and will have the smallest amount of permanent impairment of use of the leg after treatment has been completed. Though this consideration may quite properly be regarded as commercial and not at all humanitarian, nevertheless it must be clear to everyone that it works to the advantage of the injured man.

To sum up, then, orthopedic surgery is simply a subdivision of general surgery. It deals with crippling diseases and serious injuries involving bone and joint and their related structures both in children and adults. It is a branch of surgery which has made tremendous progress and is certain to make further advances. It is a kind of surgery which will always be dear to the hearts of those who love children because it docs so much to smooth the way of the unfortunate crippled youngster. It is a branch of surgery which will always appeal to society in general because it concerns itself with the reconstruction and rehabilitation of the seriously injured who would otherwise become dependent burdens on society.

MINUTES NEBRASKA STATE MEDICAL ASSOCIATION, ANNUAL MEETING, OMAHA, MAY 14-16 (Concluded)

REPORT OF THE LEGISLATIVE COMMITTEE

Hon. House of Delegates of the
Nebraska State Medical Association.
Gentlemen:

The following is a report of the legislative matters in which the Nebraska State Medical Association was interested during the last session of the legislature:

House Roll 15 was a bill relating to the public health, convenience and welfare; providing for camp ground sanitation; providing penalties for violation of the several sections thereof. So far as it was of interest to the medical profession, the bill required that a water supply of sanitary quality should be provided in ample quantity to meet all requirements of the maximum number of persons using the camp grounds. Also that any water considered unsafe for human consumption in the vicinity of the camp grounds to which the campers might have access should be either eliminated or purified. The bill also specified a method of disposing of sewage, etc. This bill was referred to the Committee on Public Welfare and indefinitely postponed in the Committee of the Whole of the House on February 7. In this bill there was really nothing in which the medical profession was particularly interested, except the matter of sanitation. The bill had the appearance of being a matter of contest between different parties extending entertainment to tourists.

House Roll 16 was a bill to amend section 5440 of the Compiled Statutes of Nebraska for 1922 as previously amended by Chapter 160 of the Laws of 1923, and related to railroads. The bill provided that free transportation might be given to physicians and surgeons actually employed by railroad companies to render medical services in behalf of railroad companies and the dependent members of the employees' families regardless of whether or not the physician and surgeon devoted a major portion of his time to the service of the company. This bill passed both Houses, but was vetoed by the governor. To us the bill seemed only fair for railway physicians but was vetoed upon the general basis that free transportation should not be encouraged on any railroad.

House Roll 44 was a bill for an act to amend Section 15, Chapter 167, Laws of Nebraska for 1927, and related to public health, convenience and welfare; provided that membership on the staff of instruction of an institution where professions are taught and regulated by the chapter before mentioned should not disqualify any person to be a member of the Board of Examiners in Nursing. The purpose of this bill was to permit instructors in institutions where professions are taught to serve as members of the Board of Examiners in Nursing. This bill passed the House but failed to pass the Senate. An effort was made to raise the bill, but upon its coming before the Senate the second time, it failed to pass.

House Roll 186 was a bill giving to the Board of Control the power to fix the compensation of the Superintendent of the Nebraska Hospital for the Insane and Warden of the Nebraska State Penitentiary. Under the law as it is, the salaries of the Superintendent of the Nebraska Hospital for Insane and the Warden of the State Penitentiary are fixed by law, and the bill introduced would have given to the Board of Control power to raise or lower the salaries paid. This bill was indefinitely postponed on April 6. It did seem to your committee that the salaries of the superintendents of the hospitals for the insane in this state are lamentably low and future legislatures should give their attention to correcting this injustice.

House Roll 252 was a bill for an act relating to the practice of medicine and prescribing requirements governing prescriptions for the administration of drugs. Had this bill become a law, it would have required that every prescription for the administration of drugs and every prescription calling for the compounding of drugs should be written solely and entirely in the English language without the use of any words or phrases from any foreign, dead or defunct language. It would have also required that all prescriptions should be written in triplicate, one copy to be kept by the person writing the prescription, and one given to the patient, his parents, legal guardian or his estate. This bill was opposed by your legislative committee and was killed in the committee.

House Roll 253 was a bill for an act relating to public health and provided in substance that all health boards, state, county, and municipal, should be comprised of not more than two doctors, one from a drugless school of healing; one competent business man; and four or more sanitary engineers qualified by technical knowledge and training to discharge the duties required. In the event that the trained engineers were not available the proposed law would have empowered the board to appoint men having practical experience in sanitation such as expert or master plumbers. This bill was opposed by the Nebraska State Medical Association and failed to pass.

House Roll 322 was a bill for an act to give equal rights and privileges to all physicians and surgeons licensed to practice in the state as physicians and surgeons, in all hospitals and similar institutions, supported in whole or in part, directly or indirectly, from public revenue, municipal, county or state. Had this bill become a law, it would have permitted osteopaths and chiropractors to practice their respective professions in hospitals and similar institutions supported in whole or in part from public revenue. This bill was vigorously opposed by the Nebraska State Medical Association and was killed in committee.

House Roll 394 was a bill for an act relating to the appointment of commission of doctors in personal injury cases in the courts of the state of Nebraska, and this bill, had it become a law, would have required the court to appoint a commission of doctors whose duty would be to acsertain the person claimed to have been injured and report in writing to the court. The bill was supported by the Nebraska State Medical Association and opposed by the Legislative Committee of the Nebraska State Bar Association. It was indefinitely postponed upon the report of the Judiciary Committee of the House.

House Roll 527 was a bill for an act to promote the science of anatomy by the creation of a State Anatomical Board, and to provide through the said board for the distribution and use of certain dead human bodies for educational purposes. The purpose of the bill was also to prevent the unauthorized use and distribution of such bodies and to provide penalties for the violation of the act. The bill provides in substance that the heads of the anatomy departments of the medical and dental schools and colleges of the state shall be appointed as the State Anatomical Board for the distribution, delivery and use of certain dead human bodies among the schools, colleges and persons entitled thereto under the act. Under the act the head of the anatomy department of the University of Nebraska, College of Medicine, is required to call a meeting of the board for organization at a time and place to be fixed by him within thirty days after the act becomes effective. The board is to have power to establish rules and regulations for its government and for the collection, storage and distribution of dead human bodies for anatomical purposes. The bill also provides that all public officers and the person in charge of every almshouse, prison, morgue, hospital or other institution having charge or control of any dead human body whose burial must or may be a public expense shall be required to immediately notify the chairman of this board, or such agent, school, college or institution that may from time to time be designated by the board whenever such dead body or bodies come into his, her, its or their possession, charge or control. It also requires that the body shall be delivered without fee or reward. The bill provides that dead bodies shall be held for a period of thirty days from the date of death before distribution. The distribution of the bodies among the medical and dental schools and colleges, physicians and surgeons, etc., is to be made in accordance with rules adopted by the board. Certain provisions are embraced with reference to the distribution which are somewhat in detail and have to do with distribution to colleges and schools in proportion to the number of students matriculated in the first year work. This bill was supported by your legislative committee and passed both the House and Senate and was signed by the governor.

House Roll 543 was a bill for an act to amend section 8272, Compiled Statutes of Nebraska for 1922, and relates to the Department of Public Welfare. The bill as it was originally drawn would have required the Department of Public Welfare to inquire into the whole system of public and private charities and methods of the practices in the public and private charitable and correctional institutions of the state to ascertain the condition thereof, etc. The bill as passed had, through the influence of the Medical Association, stricken out the underlined portions above, thus eliminating the necessity of inquiring into private charities and private charitable institutions. The bill as originally drawn also made it the duty of the Department of Public Welfare to inquire into private hospitals, etc. The bill as passed eliminated the word "private" preceding the word "hospitals" and substituted therefor the following: "Whenever complaint in writing shall be made against a private charity, hospital—alleging that said institution is conducted in an unsanitary or unlawful manner, the Department of Public Welfare shall inspect said institution and shall cause civil or criminal procedings against said institution if found to be violating any law".

Senate File 83 was a companion bill to House Roll 16, which related to free transportation upon railroads. This bill suffered the same fate as House Roll 16. It was not passed.

Senate File 152 related to witnesses in civil cases and required that witnesses respond to subpoena issued by the District Court any place in the state. It provided for the payment of fees and mileage of witnesses and that the fees and mileage should be taxed as costs. This bill woud have required a doctor living in Omaha to respond to a subpoena issued out of the District Court of Lancaster County, his compensation to be only that which the law provides as witness fees and mileage, unless, of course, an agreement with reference to professional witness fees had been entered into. This bill was opposed by your committee and failed of passage.

Senate File 153 was a bill for an act to amend sections 3060 and 3065, Compiled Statutes of Nebraska for 1922 and relates to the liability of an employer for compensation to an employee for injuries received in the course of employment. It provides to what District Court appeals are to be taken. It provides to what court appeals shall be taken when accidents occur outside of the state and prescribe that the petition on appeal for notice shall be filed within fourteen days. It also prescribes the cases in which applications to modify orders, awards and judgments shall be made to the District Court. The only objection which the medical profession had to this bill were technical and were eliminated prior to the passage of the bill.

Senate File 154 was the bill providing that all compensation cases, except applications for lump sum settlements, should be heard in the first instance by a deputy of the Compensation Commissioner, and that appeals from the awards from such deputy should be heard by the Compensation Commissioner, and that appeals from his decisions should be taken to the Supreme Court, etc. Had this bill become a law, it would have amended sections 3060, 3062, 3075, 3076 and 3080, Compiled Statutes of Nebraska for 1922. The only objection that the Nebraska State Medical Association, as represented by the Legislative Committee, had to this bill was a technical one to which the committee having the bill in charge would have acceded, but in view of the fact that the bill failed of passage, it is not necessary to go into detail with reference to the matter.

Senate File 155 was a bill for an act regulating the rendering of medical, surgical and hospital services in compensation cases and the fixing of charges therefor. In this bill the medical profession was very much interested, and although the report of the committee to which this bill was referred was fairly satisfactory to the members of the Legislative Committee of the Nebraska State Medical Association, the bill failed of passage, and did not become a law. Had the bill passed, it would have given to the Compensation Commissioner specific power and authority to establish and maintain a schedule of medical, surgical and hospital fees and would have given to the Compensation Commissioner certain specific powers and authority over the treatment of injured workmen that is not, under the law, at the present time vested in him.

Senate File 162, which provided for the acceptance of certificates of those passing the National Board of Dental Eamxiners in lieu of an examination before the Nebraska State Board of Dental Examiners, was a bill sponsored by the dental profession having for its purpose the correction of an error in the law of the state relating to the practice of dentistry. This bill was passed and became a law.

We believe no bill which was introduced in the last several legislatures which was opposed by the Nebraska State Medical Association became a law. The only bill which failed of passage in which your committee was particularly interested was the bill relating to nurses, House Roll 44. In some cases we maintained an attitude of watchful waiting, guarding against possible amendments that might affect medical profession of the state.

Your committee was able to aid by advising in the reorganizing of the Department of Public Welfare. Every courtesy and respect was shown to the medical profession by the governor and Dr. Bartholomew was appointed as director of Public Health. Mr. Pollard, who was made secretary of the department, recognized it was new work for him, has been judicial in his trend, is studying every matter thoroughly and has in mind certain changes in regard to the functioning of the compensation department as well as of others which we are not at liberty to report at this time but which we are sure will bring to the medical profession and the people of the state the greatest of satisfaction both in economy and efficiency of administration.

Secretary Pollard has shown a most decidedly judicial, conscientious temperament. He has manifested every respect for the advice and rights of the medical profession in all matters pertaining to their work within the state. We are very free to say that we feel that we have never had a legislature in which our work has been more satisfactory to the committee and in which we felt more has been accomplished for improved conditions and with the outlook for future changes promising still further ideals for which we are striving.

I wish in connection with our work to express the highest appreciation of the cooperation and splendid work of Dr. Hohlen, chairman of the campaign committee. H has never failed us and has been untiring in his assistance and in the functioning of his department.

Respectfully submitted,

Benj. F. Bailey,
Chairman Legislative Committee
Nebraska State Medical Assn.

DEFECTIVENESS AND DISABILITY

Of the condition of children alive and in school much that is said to be "shocking" has been related in the last quarter of a century.

Looking them in the mouth we know, without tergiversation, that 90 per cent are plagued with dental disease. We know the cause of this disease to such an extent as to be able, by putting that knowledge into practice, to prevent decay and loss of teeth appreciably. But taking them as they are at school age, we also know that with a comparatively small expense 90 or 95 per cent can leave school with a complement of the full number of teeth in good repair and, with a little attention thereafter, good for the rest of life.

Leaving aside these stomatic testimonials to our ignorance of the first principles of hygiene, 30 out of a hundred children, or about 8,000,000 of those of school age present sundry sources of disability in various organs other than the teeth. Some of the defects can be done away with while most of the remainder can be improved or compensated for to a considerable extent. No one has interested himself in the handicaps of 3,000,000 of these 8,000,000 children, and adequate treatment has not been received by 2,000,000 more of them. In all, four or five millions of human machines each valued at $20,000 are running with missing cylinders and flat tires, their capacity for work and enjoyment of life being often still further reduced by bad feeding, lack of sleep, and lack of opportunity for normal animal activity in the open.

This dismal story of defectiveness, disease, and death is an old one, but if its repetition here results in stimulation of some school to such action as will reduce the deaths per annum from 50,000 to 49,999, the loss of years of schooling from 1,000,000 to 999,999 or if one defective or depressed child in 100,000 is rendered fit for his schooling and for enjoying life to the full, the cost of this circular will be returned a thousand fold.—Bureau of Education.

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ROSTER OF OFFICERS

Dr. Frank S. Owen, Omaha, President	1930
Dr. K. S. J. Hohlen, Lincoln, President-Elect	1930
Dr. E. L. Brush, Norfolk, Vice President	1929
Dr. W. R. Boyer, Pawnee City, Vice President	1929
Dr. R. B. Adams, Lincoln, Secretary-Treasurer	1930

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Dr. L. W. Rork, Hastings	1929
Dr. C. A. Selby, North Platte	1929
Dr. F. W. Plehn, Scottsbluff	1929
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Dr. Frank Tornholm, Wahoo, Chairman	1931
Dr. H. E. Potter, Fairbury	1931
Dr. B. R. McGrath, Grand Island, Ex-officio	1930

DELEGATES TO A. M. A.

Dr. A. D. Dunn, Omaha	1929
DR. R. W. Fouts, Omaha	1930

DELEGATE, COUNCIL ON MEDICAL EDUCATION, A. M. A.

Dr. J. S. Welch, Lincoln	1929

MEDICO-LEGAL DEFENSE COMMITTEE

Dr. Roy W. Fouts, Omaha, Chairman	1929
Dr. C. A. Hull, Omaha	1930
Dr. R. B. Adams, Lincoln, Secretary	1930

Note: In case of suit notify secretary at once.

HISTORIC SKETCH OF ECLECTICISM IN MEDICAL PRACTICE

The Eclectic system of medical practice had its inspiration from Thompsonionism which preceded it by nearly half a century. Benjamin Thompson was born in New Hampshire in 1769. He developed a crude philosophy that vegetables give life and minerals death and began to prescribe for the sick in his community in 1792. His knowledge of botany was very limited. His list of remedies consisted of lobelia, cayenne pepper and a strong tincture of pungent herbs known as "No. 6", and steam. In 1837 Dr. Alva Curtis of Ohio came to the fore as a leader in a system of cure known as Botanico-Medical. He had more knowledge of botany and introduced a large number of vegetable remedies, commenced the publication of a journal devoted to his cult and established a medical college in Cincinnati.

Dr. Wooster Beach, an Ohio man by adoption, born in Connecticut in 1794, died 1841, led a movement in the direction of simple Eclecticism and established a medical school at Worthington, Ohio.

In 1845 a much more successful school was established at Cincinnati called the Eclectic Medical Institute, Dr. John M. Scudder and Dr. John King being the leading figures. Dr. Scudder later originated the system of "specific medication." An American Eclectic Practice was published in 1857 by Jones and Sherwood and a work on Chronic Diseases by King in 1867, and an American Dispensatory in 1874.

William S. Merrell, after whom a great pharmaceutical house founded by him is named, was a chemist and apothecary and to him and to Dr. John M. Scudder and Dr. J. K. Scudder belongs the credit of having made most important researches in vegetable remedies.

Eclecticism gave a great impetus to the study of vegetable remedies and has contributed much to modern medicine.

During the first 20 years of its existence The Eclectic Medical Institute graduated 1800 students. Other Eclectic medical colleges were established in many of the larger cities and Eclectic medical societies were organized in most of the states prior to 1880. Legal recognition for Eclecticism was obtained from all the states but not without opposition. Eclecticism had made a place for itself. Since 1880 schools and journals established have gradually been discontinued for lack of support. The general acceptance of the germ theory of disease, the development of rational medicine and the modern trend toward a modified medical nihilism, has dominated medical scientific thought for now nearly fifty years with the inevitable result to a system based on a specific theory.

For several years but one Eclectic medical college remained open for teaching purpose and it is now announced that no students will be matriculated for the coming year.

THE RECENT PORTLAND MEETING OF THE A. M. A.

Three thousand physicians journeyed to Portland to attend the meeting of the American Medical Association early last month. The meeting in all its varied interests was one of the most successful ever held. Portland is a good convention city and the surroundings have many attractions on rivers and mountains. President W. S. Thayer, in his address, stirred up a good sized hornet's nest by objecting to too much governmental regulation, having particular reference, no doubt, to the limit placed on the amount of liquor a physician may prescribe for his patient, which was at once seized upon by prohibitionists as propaganda looking toward the repeal of the 18th Amendment and heralded by the so-called wets as favoring the cause they espouse. President-elect M. L. Harris advocated county medical societies organizing, equipping and conducting medical centers for the diagnosis and treatment of ambulatory cases, the organization being in a sense a pay clinic owned and controlled by the profession. Doctor Harris' entire active career has been in a metropolitan city and he has the viewpoint of the metropolitan. If he lived in a rural community such as Nebraska he might see the need of community hospital districts and community hospitals to care for the people who at present are not within easy reach of hospitals.

The many problems before the profession, like cancer, tuberculosis and the more recent undulant fever, came in for much discussion.

The usual number of scientific and commercial exhibits were displayed.

Comment on the work of the House of Delegates is reserved for a future date.

Dr. William Gerry Morgan, Washington, D. C., was elected President-elect and Detroit was chosen for the place of meeting in 1930.

Nebraskans on the program were Drs. D. T. Quigley, J. B. Patton, B. M. Kully, Omaha. Delegate Roy Fouts was placed on a reference committee.

The number of Nebraska physicians attending the meeting was 35. Their names are given on another page.

UNION PACIFIC SURGEONS' ASSOCIATION

The Union Pacific Association of Railroad Surgeons was organized in Omaha, June 29, about one hundred surgeons being present from points on the lines as far west at Ogden and as far south as Kansas City. Preliminary to the organization dry and wet clinics were given at St. Joseph's Hospital, foremost being the presentation by the chief surgeon of perhaps 100 fracture cases. Luncheon was served in the basement of the hospital. The afternoon session was held at Union Pacific headquarters. A constitution was adopted and Dr. John R. Nillson, chief surgeon, was elected president; Dr. Hugh Taylor, division surgeon, Denver, president-elect, and Mr. E. M. Southard, assistant in charge of the Hospital Department, Omaha, secretary-treasurer.

Scientific papers were given by three of the members of the chief surgeon's local staff and a number of talks were given by officials of the Union Pacific, including an address by President Carl Gray who welcomed the surgeons to Omaha and commended the organization.

A banquet was tendered in the evening to the surgeons and their ladies by the Union Pacific at the New Paxton Hotel.

The next annual meeting will be held at Denver, the last Saturday in June, 1930.

CONTAGIOUS ABORTION AND UNDULANT FEVER

A recent editorial, in *The Nebraska State Medical Journal*, a portion of which reads as follows, has been called to my attention.

"Since we know now that the contagious abortion of cattle is produced by the same germ as undulant fever, it must be true that we have many unsuspected cases of undulant fever in this state, derived from milk and butter of affected cows. If, as suggested, our state laboratory is not equipped to discover the germ in material sent to the laboratory for examination, then it is high time that those in charge rise to the occasion."

The best evidence we have been able to secure supports the idea that the germ commonly producing contagious abortion in cattle is closely related to but not identical with the germ commonly producing undulant fever. It seems much more probable that the porcine strain of *Br. melitensis* is the one chiefly involved in human cases rather than the strain common in contagious abortion in cattle. Epidemiological evidence also seems to support this point of view, which, if correct, absolves butter and milk from blame and indicates that prevention depends on individual sanitation and the prevention of contagious abortion in hogs. It is improbable that any important relationship exists between contagious abortion in cattle and undulant fever.

Laboratory examinations pertaining to undulant fever have been made at this laboratory since the spring of 1928. So few of the tests made since that time have been positive that we strongly suspect that undulant fever is not a public health problem of any great magnitude in this state. The occurrence of a positive reaction in blood from cases not clinically undulant fever has convinced us that the diagnostic value of a positive agglutination test for undulant fever has important limitations.

At the present time undulant fever seems to be more a matter for investigation and research than for extensive practical work in disease prevention. Good investigational work is being done by others, the state laboratory, however, must confine its efforts largely to the application of procedures and methods of proven value. Certainly we do not wish to give the subject an amount of attention and publicity out of proportion to its importance nor to contribute to a state of melitensiphobia.

L. O. Vose, Bacteriologist,
Public Health Laboratory, Lincoln.

KEEPING HISTORY STRAIGHT

Dr. F. S. Owen, in his presidential address before the Nebraska State Medical Association, as reported by the *Journal,* falls into an error when he states that a Pope once prohibited the practice of surgery. This is untrue. Pope Boniface VIII, in the year 1300, issued the famous "De Sepulturis" Bull. This was little more than a hygienic rule, concerning itself with the dismemberment of bodies and shipping of anatomical parts from one region to another, in those crusading and foreign war times. It is likely that wars in those days, as in our own, were frequently accompanied by dreadful epidemics. Scholars admit, and the correct and complete translation of the Bull shows, that it had no more to do with scientific dissection and surgery than our present state law concerning the disposal of diphtheria dead bodies. Yet this Bull ignorantly misunderstood, or dishonestly translated, furnishes the only possible basis for the charge made by several otherwise excellent histories of medicine, that a Pope had at any time hampered the dissection of bodies for scientific purposes.

The refutation of this false and nonsensical charge is at the hand of every student of anatomy who is familiar with the names of Mondino, Guy de Chauliac, Berenger, Vesalius, Sylvius, Eustachius, Fallopius, and Steno. The times of these men might almost be described as the golden age of anatomy, yet corresponded to the time that this or any other papal prohibition might be expected to have its most retarding effect. These men were all physicians to the popes, papal or church proteges, professors in universities presided over by church dignitaries, or were as Dr. Owen suggests, ecclesiastics themselves.

As I take it that *The Nebraska State Medical Journal* means to be entirely fair, and is in no way a purveyor of religious misrepresentation, I hope that this protest will find space in its columns.

—J. P. Dougherty, Sioux City, Ia.

IODINE SURVEY OF NEBRASKA

Samples of food materials, water and soil of Nebraska were analyzed by W. H. Adolph and F. J. Prochaska, Laboratory of Chemistry, University of Nebraska, Lincoln, (*Journal A. M. A.,* June 29, 1929), for their iodine content according to the method of McClendon. The water supplies contain sufficient iodine for the maintenance of thyroid equilibrium. Food materials are not low in iodine content. Simple goiter is not prevalent and Nebraska can be properly grouped as one of the nongoitrous states. Examination of the soils failed to show the presence of iodine in significant amounts in Nebraska soil. It must not be overlooked, however, that the iodine in soil may be present in either a soluble form or in what is apparently an organic combination. In the former case, it would have been leached out by rain and surface water; and this seems to have happened in the case of the loess and sandy soils of the state. Experiments indicated that those soils containing an appreciable amount of organic matter showed measurable amounts of iodine, while sandy soils did not show any iodine. Organic iodine in the soil would appear to be a prerequisite for iodine-containing vegetable food material. On the whole, the data for the iodine content of surface soil would not appear to be nearly so significant as those of the underground water supply. Experiments indicated that appreciable quantities of iodine are not lost in the cooking of vegetable food materials.

TEACHING OF MODERN SURGERY

Dean Lewis, Baltimore (*Journal A. M. A.*, May 18, 1929), asserts that surgery no longer confines itself to the consideration of inflammatory processes, amputations, fractures and dislocations, tumors and emergencies. While the field of surgery has become more and more extensive, the number of hours devoted to it in medical curriculums has been gradually reduced, so that the surgical department, as far as the number of hours is concerned, has been compelled to teach less and less of more and more. A surgical clinic should be a college and a university combined. The college training must be more or less general. The student must be taught the principles of surgery; he should become acquainted with diagnostic procedures; he should see and interpret the pathologic changes that interfere with or destroy the function of tissues or organs, and should familiarize himself with the technic required in the treatment of surgical emergencies. The university division of the clinic must provide opportunities for advanced students who in college have shown a special aptitude for and a desire to specialize in surgery. These opportunities may best be provided by making those working in the university division members of the surgical teaching staff, on whom full responsibility for the care of patients and of teaching may be placed. Provision should also be made for a limited number who, having been engaged in active practice, wish to devote some time to new and advanced studies. Instruction in clinical surgery must be scientific, searching and academic, but it should never be forgotten that clinical surgery is being taught. In Lewis' opinion there are certain defects in medical teaching in general. He says that during the past few years attempts have been made from time to time to advance clinical instruction to the second, even to the first year. Students at this period are usually unable to apply clinical methods and are not prepared to engage in clinical investigation. Some propedeutic or preparatory clinics have been extremely valuable. Propedeutic or preparatory demonstrations would be preferable to clinics. The student would not be brought into intimate contact with patients, but patients could be used to demonstrate knowledge acquired in the preclinical years. Shock, hemorrhage and infections could be discussed. The clinical picture of suppurative thrombophlebitis could be demontasterd. The advisability of adopting Lexer's classification of infections, based on a newer bacteriology, might be discussed. The student has just finished his anatomy, and the relation of muscle action to the displacement of fragments in fractures may be shown. By such demonstrations the students' attention would be directed to the application of knowledge gained in preclinical years to clinical problems. The instructor has an opportunity to give students the latest accepted teaching and to dismiss the false observations and statements that have accumulated in textbooks over a number of years. The instructor must act as a critic. By such a series of demonstrations the student is shown how the work of the preclinical years must be carried into the clinical years and applied to clinical problems. He is not thrown early, when totally unprepared, into clinical surgery, which has attractions for so many. His attention is not diverted from the fundamentals. There should be a certain methodical progress in instruction and regular purposeful steps by which students pass from the beginning of their studies to independent activity in the clinic where they receive their final preparation. When students should enter the hospital has been the subject of considerable discussion of late. The outpatient department is of especial importance to the surgical clinic, for here a large number of patients that cannot be hospitalized with present facilities are studied. The third year student should be in the dispensary. Concentration of teaching during this period is absolutely essential. Two hours in the morning may be devoted to history taking and the examination of patients. From 12 to 1, some typical or especially interesting cases should be demonstrated to the group by the instructor in charge. Teaching rooms should be provided. Small examining rooms add to the efficiency of the dispensary, for the student's attention should not be diverted while examining the patient. Medical literature should be cited. There cannot be any argument about the value of bedside teaching and ward talks. Bedside teaching should not, however, be carried on as a matter of routine. The student should be taught the art of history taking and the methods of examination under the supervision of an instructor. The art of history taking should be cultivated; not enough attention is paid to it now. The importance of inspection, palpation, percussion and auscultation should be emphasized, and the diagnosis should be made by the ordinary clinical methods before the accessory or supplementary methods are employed. The clinical, gross and microscopic pictures should be correlated. One of the great defects of our present system of education is the wide separation of departments as to both space and time. A student may study the pathology of tumors in his second year, and he may not see such a tumor clinically until well on in his third or fourth year. If the student examines a tumor of the breast in the dispensary or in the ward, he should go to the operating room when the patient is operated on; he should be near enough to see what the tumor looks like in situ, and should then make a gross examination of the specimen and study the section after they are made. *The operating room thus serves as a laboratory in which the clinical and pathologic pictures are correlated, rather than a laboratory where surgical technic is demonstrated.* It is much better pedagogically to have a student see the pathologic changes in acute appendicitis at the operating table than to have him see many diseased appendixes in the newest and most beautiful preservative, when it is difficult, almost impossible, to correlate the clinical and pathologic pictures. At least two clinics a week are required to present the material properly, one for the third and fourth year classes, and one for the third. Unless such clinics are given, entire subjects, often of extreme importance, will be missed. The teachers in charge of the courses should see that the different fields of surgery are thoroughly covered. If an instructor gives clear, logical lectures, he should not be compelled to give a clinic. It is unwise to attempt to fabricate instructors. Individuality must be encouraged, different points of view given. Pathologic training is of prime importance in the development of a surgeon. Every one practicing surgery should have at least a year's training in pathology before entering on the work. A student acquires a sense for scientific work only in his student days, and the degree of scientific training and interest imparted to the young man at the medical school determines his intellectual level for the rest of his life. In surgery the lack of technical skill, deftness and certainty as to methods of approach is glaring. Preparation of supplies with which the student should be familiar may be taught in a number of ways. The properties of different suture material should be discussed. The technic of gastro-enterostomy and intestinal suture can be satisfactorialy demonstrated and practiced on the stomach and intestine of the pig. Tendon, nerve and vascular sutures should be familiar to the student. Operative surgery on the cadaver is of doubtful value for the tissues differ in appearance from those in the living body. Most of the operations can be much more satisfactorily demonstrated to small groups who follow their patients to the operating room than in any other way. Emergency operations should be thoroughly known. It seems pedantic on the part of the instructor to give the name of the surgeon who described a new syndrome or the technic of some operation. Unless the student has some bent for history, the name will go in one ear and out of the other; but the mention of the name may stimulate the student to undertake some special historical reading which will broaden his view. If the outstanding names in surgery are repeated from time to time, enough interest may be aroused to influence the student to delve into history. The historical spirit should permeate the courses. Courses in the history of medicine and surgery have practically disappeared. The only opportunity to arouse some interest in history is found in the clinics devoted to the teaching of clinical surgery. A year's internship in one subject is preferable to a rotating service. If the graduate takes a year in medicine or pathology before entering on surgery, it will add to his efficiency. Any student should have an opportunity to appear before a licensing body irrespective of whether he has studied in an institution with fewer hours devoted to a certain subject than the state deems necessary or whether he has served an internship that corresponds to the one it requires. Any graduate should be allowed to appear. The examiners should decide as to the capabilities of the student. The medical curriculum has become crowded with new subjects and liberalization is desirable, for the student must have time to digest the material given him—a little time for contemplation and study. The elective system works well. Students are able to select the instructor and to take work at other institutions. Such a method widens the student's point of view. Some control should be exercised, however, so that the poor student will not be the one that is too anxious to escape from parental control. The student must also be well advised, so that he does not specialize too early, for each must still be regarded as a part of the whole. Required courses must not conflict with elective courses. The resident system is the foundation of the university division of the surgical clinic. Men chosen for the resident positions should be carefully selected and should have special qualifications. Full responsibility for the care of patients should be placed on residents as soon as they develop. The resident system should give opportunity for the development of a number of men. Residents should take an active part in the operation of the department and should be used in the dispensary and in teaching. Provision should also be made for graduates in medicine who wish to carry on advanced studies in surgery. No courses for these should be shorter than four months. It would be better if physicians taking such a course could remain six months. Teachers must be provided. Teachers of clinical surgery are trained gradually and at the bedside by eminent practicing clinicians. To teach seventy-five students, the service should have at least 200 beds. This number of beds will supply the staff with cases for study and meet the teaching demands. A student learns surgery by seeing material. "Repetition is the parent of learning." Surgery demands a careful objective examination of the patient for the establishment of an anatomic diagnosis, which, together with the symptomatic diagnosis and etiology, creates a concept of a progressive and variously modified disease process. Only by a combination of all the data does one arrive at a method of treatment that is designed to attack not merely the symptoms but, wherever possible, the cause of the process—the disease itself—as well as the disease products. A student learns clinical surgery by observing carefully and critically a large material and verifying his diagnosis by autopsy or operation. Great clinicians accumulate a store of knoweldge. Not infrequently they seem to have intuitive diagnostic power. At least one hundred beds should be free. *Admission to such beds should be under the charge of the surgical department.* Surgeons working in the department know what material is needed for teaching and the problems that members of the department have under consideration.

EDITORIAL PARAGRAPHS

A meter to measure the intensity of ultraviolet rays, the invention of Dr. Rentchler of the Westinghouse Co., was exhibited recently in New York.

Hoffman-Laroche, Inc., one of our advertisers, has moved into the new laboratory recently erected at Nutley, N. J., which will be the address in the future.

We had an attendance of 450 at the annual meeting, over which we all feel proud; Kansas reported 350; Oklahoma put us all to shame, for, if the report is accurate, 600 physicians attended the meeting.

A manufacturer of a dentifrice has sued Dr. Morris Fishbein, editor of the *Journal of the American Medical Association* for slander and places the damages at $500,000. Poor Morris—and so young!

A contributor writes—"*The Nebraska State Medical Journal* must be widely read. I get requests for reprints from all the states in the union. Just recently I have sent reprints of articles published in our *Journal,* to Georgia, Oregon and Connecticut."

A valued medical contributor said, in speaking of his colleagues, in his own home town—"They don't know nothing; they don't take any journals; they wouldn't read 'em if they did take 'em, and damn 'em, they wouldn't understand 'em if they did read them." We wonder!

Marco Polo in the thirteenth century spoke of goiter thus: "A large proportion of them—the people of Yarkand—have swollen legs and great crops at the throat, which arises from some quality in their drinking water." He also mentions "Kumiz" as a favorite drink.

The American Public Health Association announces that the first award of the Sedgwick Memorial Medal will be considered in 1929. This award was established in honor of the late Professor William Thompson Sedgwick, a former president of the American Public Health Association. The fund which provides the medal was raised by popular subscription from Professor Sedgwick's former students and friends. It is to be awarded for distinguished service in public health, through nominations, not by direct application.

Bloodgood, in *Campaign Notes* of the American Association for the Control of Cancer, asserts that cancer is a public health problem and urges that it be taken up by the various city, county, and state departments of health with the assistance of the federal department of health. He cites Massachusetts as having appropriated $200,000 annually for the cancer problem and mentions several other states making state wide surveys and doing educational work on this subject. The medical profession cannot accomplish the best results in this educational effort without the help of county, state and city departments of health.

NEBRASKA PHYSICIANS AT THE PORTLAND MEETING A. M. A.

Bald, Arno A., Platte Center.
Bridges, E. L., Omaha.
Davis, J. Calvin, Jr., Omaha.
Dunn, A. D., Omaha.
Dunn, F. Lowell, Omaha.
Fouts, R. W., Omaha.
Frary, R. A., Stanton.
Jenkins, Harry J., Omaha.
Kully, Barney M., Omaha.
Long, Rachel W., Holdrege.
Lovely, Frank T., Omaha.
Martin, James W., Omaha.
Mitchell, A. R., Lincoln.
Nemec, Charles J., Omaha.
Nilsson, John R., Omaha.
Quigley, D. T., Omaha.
Ranee, William T., Omaha.
Sachs, Adolph, Omaha.
Tucker, James C., Beatrice.
Arnold, Chas. H., Lincoln.
Bliss, Rodney W., Omaha.
Calbreath, C. B., Hastings.
Davis, Byron B., Omaha.
Gibson, L. V., Lincoln.

Hamilton, Howard B., Omaha.
Hellwig, J. W., Omaha.
Henske, J. A., Omaha.
Johnson, Henrietta M., Broken Bow.
Patton, Jas. M., Omaha.
Potts, John B., Omaha.
Rowe, E. W., Lincoln.
Sayre, C. Edward, Norfolk.
Brooks, Earl B., Lincoln.
Wherry, W. P., Omaha.
Total—35.

MORBIDITY SUMMARY—PRINCIPAL DISEASES

	1929		1928	
	June	May	June	May
Chickenpox	76	154	58	168
Diphtheria	29	61	24	33
Influenza	0	4	24	68
Measles	708	1281	123	306
Meningitis, Cerebrospinal	1	8	1	2
Poliomyelitis	1	0	0	0
Scarlet Fever	123	551	140	395
Smallpox	127	321	106	229
Tuberculosis	14	25	20	18
Typhoid Fever	4	15	10	2
Gonorrhea	149	250	215	137
Syphilis	86	121	71	62

THE SOCIETIES

The **Lincoln County Medical Society** held their monthly meeting at the Elks Club, North Platte, June 13th. Dr. C. A. Selby had charge of the program. The dentists of the community were guests of the society and Dr. Howard Yost (dentist) gave a very interesting lantern slide lecture on dental occlusion. Dr. Krause and Dr. Snavely (dentists) then discussed the subject. At a future date the dentists will be invited and focal infection will be the subject of discussion.

—J. B. Redfield, North Platte.

The June meeting of the **Madison Five Counties Medical Society** was held at Wausa, June 20. Fifty-two doctors and their ladies partook of the dinner which preceded the program.

Dr. R. Q. Rowse, Sioux City, Iowa, read a paper on "Early Recognition of Cancer of the Uterus." He again emphasized the need of thorough examination; advocated radiation in certain cases preparatory to operation. Dr. J. F. Naftzger, Sioux City, gave a paper illustrated with slides, on "Foreign Bodies in Food and Air Passages". X-ray shows metallic objects but not vegatable products and in the latter cases the diagnosis is, therefore, made more difficult. Objects lodged in cul de sacs offer much difficulty in location and removal, the bronchoscope is apt to pass by the object covered by a reflection of mucous membrane. Dr. A. C. Starry, Sioux City, showed a series of slides showing "Pathology of the Appendix". Two to three per cent of cases of appendicitis are due to intestinal parasites. Dr. W. R. Mechtenberg, Wausa, read a paper on "Intermediate Cervix Repair", which called forth much interest, the subject being new to many.

The July meeting of the society was held at Orchard on the second of the month. The program was furnished by the three Doctors Fletcher, and follows:

"Subphrenic Abscess, Case Report", Dr. W. G. Fletcher.

"The Acute Abdomen, and the General Practitioner", Dr. D. L. Fletcher.

"Early Signs of Tuberculosis", Dr. A. G. Fletcher, Taiku, Japan.

Dr. W. G. has had the quite unusual experience of having had 20 cases of subphrenic abscess. Dr. D. L. stresses the important points in diagnosis of acute abdominal conditions and urged the general practitioner to greater effort in diagnosis. Dr. A. G., a medical missionary in Korea, gave a splendid paper on early diagnosis of tuberculosis.

About fifty attended the dinner and program.

HUMAN INTEREST TALES

Dr. Olga Stastny, Omaha, has gone to Europe for a vacation.

Dr. K. E. Krueger of Dodge visited in Wyoming during July.

Dr. and Mrs. L. D. McGuire, Omaha, have gone to Europe for travel and study.

Dr. H. C. Kimberlin has located at Beatrice to do eye, ear, nose and throat work.

Dr. Adam Kerney, after six years of practice at Petersburg, has moved to San Diego.

The Doctor Eby hospital at Leigh was closed July 1st, after 12 years of successful operation.

Dr. and Mrs. C. W. Keith, Edgar, have gone to Ontario for a visit and also to attend clinics.

Dr. C. D. Langrall, after several years' absence, has returned to Arcadia to engage in practice.

Dr. G. F. Zarbaugh, Dalton, and Dr. J. P. Rigg, Hastings, have gone to Europe for a year of study.

Dr. John T. Eagleton, formerly of Murray, has become associated with Dr. George Hoffmeister, Imperial.

Dr. E. C. Lynch, for several years in practice at Litchfield, has gone elsewhere and is succeeded by a Doctor Earle.

The marriage of Dr. B. W. Pyle and Miss Florence Frahm of Blue Hill is announced. They will live at Gothenburg.

The marriage of Dr. L. R. Markley, Kimball, and Miss Winnegred Lute of Denver, in the latter city, July 5, is announced

Dr. H. W. Orr, Lincoln, went to Geneva, Switzerland, to attend an international congress to better the condition of crippled children.

Dr. J. P. Weyrens and two children, Scottsbluff, have returned from a trip around the world and a visitation to some celebrated European clinics.

Dr. Marie Simonson, the only woman graduate of the University College of Medicine this year, is heralded as an outstanding student against great odds.

The people of the Dannebrog community presented Dr. P. M. Pedersen a gold watch and a fountain pen, in appreciation of his 25 years of faithful service to the community.

Dr. B. W. Pyle, for the past year associated with Dr. E. L. Hustead of Scribner, has located at Gothenburg, succeeding Dr. Wm. Johnson who is going to locate in Hollywood, Calif.

The marriage of Dr. John H. Calvert, Detroit, Mich., and Miss Alma Goebel of Overton, was celebrated at York, June 19th. Dr. Calvert is a native Nebraskan and a graduate of the University College of Medicine.

Dr. J. M. Patton, Omaha, spoke before the Idaho Medical Society annual meeting at Lewiston, July 5, on "Foreign Proteins in the Treatment of Occular Inflammations", and on the following day on "The Management of Ocular Emergencies."

Dr. Edgar V. Allen, a Cozad boy, graduate of the University of Nebraska College of Medicine, after completing a four year Fellowship at the Mayo clinic, has been awarded a scholarship by the National Research Council worth $2,400 for study in Europe.

NECROLOGY

William H. Pruner, Omaha; Creighton University College of Medicine, 1907; well known practitioner in Omaha since graduation; member, Nebraska State Medical Association; died following a cerebral hemorrhage, July 3, 1929, aged about fifty-four years.

J. H. Tyndale, Lincoln, (retired); St. Louis College of Medicine and Surgery, 1868; a veteran of the Franco-Prussion and Civil wars; died June 7, 1929, aged about eighty-six years.

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UNDULANT FEVER*

A. V. HARDY, M. D.,
Acting Assistant Surgeon U. S. Public Health Service,
Director of State Hygienic Laboratories,
Iowa City, Iowa.

General. Until very recently undulant fever in the United States was a medical curiosity. In 1925, excluding Texas, six cases only were recognized and these in four widely separated states. In 1928 reports obtained chiefly from state departments of health show that more than five hundred and fifty cases were recognized in forty states. In the past three years there has been in the United States an average annual increase of over 300 per cent in the known incidence of this infection. The recognition of this probably old and not uncommon disease has been brought about by an increasing awareness of its prevalence and by a better knowledge on the part of the physicians of its clinical characteristics. Laboratories have also contributed in a most important way by making readily available a reliable diagnostic test. The further spread of knowledge regarding this infection will undoubtedly result in the recognition of an increasing number of cases. Your society is, therefore, to be commended for devoting time to a discussion of undulant fever. It is my hope that your county societies will be guided by its example and in the coming year spread effectively to all physicians in your state the recent knowledge of this infection.

As suggested by two frequently used names, Malta fever and Mediterranean fever, it was first thought that this disease was peculiar to the region of the Mediterranean. The discovery, in

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*Read before the annual meeting, Nebraska State Medical Association, Omaha, May 14, 1929.

1905, that goats were a common source and raw goat's milk a common mode of spread, then limited the disease to goat-raising districts. Now we know, however, that any domestic animal may be infected with an organism closely related to, if not identical with the previously named *Micrococcus melitensis*. Such an infection is wide spread among cattle, and occurs not infrequently in hogs. In animals it is known as contagious or infectious abortion. It ranks above tuberculosis as a cause of loss to the livestock industry, and among cattle it is now generally believed to be more prevalent than tuberculosis. That humans may be infected from diseased animals makes these conditions also of interest to physicians.

Etiology. The family or genus of bacteria which causes undulant fever was first described more than forty years ago. For more than twenty years, however, strains of the same genus, though practically identical but from different sources, were considered as entirely distinct organisms. They were given markedly different names, one strain being classified as a coccus and the other as a bacillus. Colonel Bruce(1) in 1887 described organisms observed in spleens removed at postmortem from cases of undulant fever. These he later succeeded in culturing and proved to be the etiological agent in undulant fever. From his description, this organism became known as the *Micrococcus melitensis*. Nine years later, a Danish veterinarian, Dr. Bang(2) isolated another organism which he proved to be the cause of contagious abortion in cattle. In his description he pointed out that, though frequently when seen in diseased tissue these appeared as cocci, still on critical examination and particularly after cultivation, they assumed definitely the form of short bacilli with rounded ends. In view of this description the name, *Bacillus abortus* was adopted. The true relationship of these bacteria was first pointed out in 1918 by Miss Alice Evans(3). Her findings have been repeatedly confirmed and it is now agreed that morphologically, culturally, and biochemically, these strains are indistinguishable. Even by ordinary serological tests, they cannot be accurately differentiated.

Obviously, organisms so closely related should be similarly named. The new name was suggested by Meyer(4). It has been approved by others and adopted generally. In honor of Colonel Bruce, the name *Brucella was coined*, and *Brucella melitensis* is now accepted as the name of these organisms. Though there are differing strains in this genus, still they are as closely or more closely related than, for example, the strains of pneumococci or meningococci.

In classifying the strains of *Brucella melitensis* there is no general agreement. We shall, therefore, be content with mentioning three varieties which do occur in the United States. The *Brucella melitensis,* variety *melitensis,* frequently infects goats and accounts for cases of undulant fever in the southern states. The bovine *abortus* variety causes contagious abortion in cattle and probably the milder cases of undulant fever. The third and most recently recognized strain is the porcine *abortus* or hog variety. This not uncommonly affects hogs, has been isolated from cattle with contagious abortion, and is likely to cause the more severe cases of undulant fever. Though these three strains of organisms are in general identical, still they have some differentiating characteristics. Two outstanding differences we may observe.

The bovine *abortus* is strikingly different from the porcine *abortus* and *melitensis* strains in that on first subcultures on solid media growth usually fails to appear if it is incubated in an unmodified atmosphere. Placed, however, in an atmosphere with an increased carbon dioxide tension, from 2 to 10 per cent by volume, growth takes place quite readily. Under the same conditions the growth of the other two strains is somewhat inhibited. Of the bovine strains which we have isolated, one only grew on first subcultures in an unmodified atmosphere. One must remember then that with but few exceptions, the ordinary technique of handling blood cultures even with prolonged incubation, usually fails to show the presence of *Brucella melitensis,* variety *bovine abortus*.

The second outstanding difference between these strains lies in their pathogenicity for small laboratory animals, for monkeys and for man. In guinea pigs the porcine strain causes much more extensive pathological lesions than does the bovine strain. A similar comparison of freshly isolated melitensis and porcine strains has not been carried out. In monkeys the porcine strain is even more pathogenic than the melitensis. (Huddleson (5)). It causes a fatal disease. Using the bovine *abortus* strain, infection is established with difficulty; the illness is mild and results in recovery. Apparently only the more highly pathogenic strain of the bovine *abortus* organisms are ordinarily pathogenic for humans. Evidence accumulated at present indicates clearly that humans do acquire undulant fever from infected cattle, but is equally apparent that there are many infected cattle giving off organisms in their milk, which cause no infections in humans even though this milk is used raw. Whether this is dependent upon an acquired or natural immunity in humans to the bovine strain, or whether due actually to the nature of the organisms has yet to be determined. The *melitensis* strain is known to readily cause human disease and evidently the same is true of the porcine *abortus.*

The sources and modes of transmission. Until recently it was generally conceded that goats were the chief source of undulant fever and that goat's milk could be incriminated as the principal carrier of the infection. This belief was substantiated by the fact that the extensive occurrence of the disease among English soldiers and sailors in the Mediterranean area was prevented by prohibiting the use of raw goat's milk. More recently, however, even where goats were known to be the source of the human infections, it has been repeatedly pointed out that goat herders became infected even though using no goat's milk as food. Even from goats, then, other modes of transmission than by milk have been seriously considered.

Except in a limited area and in a small proportion of the cases, other animals must be considered as the source of undulant fever in the United States. In some of the cases studied the source was found to be hogs. We have observed a number of cases of undulant fever among workers in packing houses handling only hogs. Also in Iowa serological studies of stock on farms where cases occurred has often revealed infected hogs, while other animals were entirely free. There have been, however, other cases in which the person had no contact with livestock of any kind and almost invariably in these we have found that raw milk from infected cows was used.

That undulant fever may be transmitted from cattle through the use of raw milk from infected animals, is I believe an established fact. The findings could not be explained except on this basis. Whether this mode of transmission is the common one, is, however, still an open question. In families in which the occupation involved the handling of live stock, meats or dairy products, we have found eight males infected for each female. Among those in which the occupation did not give any contact with livestock the number of males and females were almost equal. Such findings are unexplained on the assumption that the infection is commonly milk-borne. However, experimentally we have been able to show that in guinea pigs, *Brucella melitensis* causes infection more readily when the organisms are rubbed on the normal skin than when fed by mouth. From these experiments and from our findings it seems evident, therefore, that the infection may be readily acquired in the handling of livestock, fresh meats, or dairy products. In these instances the organisms probably gain entrance through the normal or abraded skin.

In diagnosing any communicable disease a knowledge of exposure is a valuable aid. Physicians should therefore be able to intelligently inquire regarding the occurrence of *Brucella melitensis* infections in domestic animals. In cattle though the condition is called contagious abortion, still this sign of the disease is not observed in even a majority of infected animals. In the cow the infection localizes either in the uterus or udder. In the pregnant uterus it causes a chronic, subacute, or acute inflammatory process which may terminate in abortion. In some cases it results only in premature birth with the calf dying within the first few days after birth. In others with birth at term the placenta does not separate normally but is retained. One can readily understand also that such an inflammatory process may result in scarring or adhesions, which close the tubes or cervical canal, and it is true that sterility is a common sequel of this infection. Abortions, retained placentas, sterility and calves dying shortly after birth are, therefore the important signs of contagious abortion in cattle. These signs are usually present in infected herds, but it must still be remembered that the organisms may localize in the udder, give no sign of infection and yet be a dangerous source for human disease. In such animals the infection can be detected only by serological tests. Thus we see that from the history of a herd one may fairly accurately determine the presence or absence of contagious abortion, while for individual animals serological evidence is essential.

Among hogs the clinical signs of infection are more uncertain. Abortion when it does take place is rarely observed by the farmer since the foetuses are usually eaten by the hogs. Sterility is not a common sequel. Dead foetuses born with other living pigs is suggestive, but this does not always indicate *Brucella melitensis* infection. Without serological evidence one only rarely can accurately diagnose *Brucella melitensis* infections in these animals. Contact with apparently normal hogs may, therefore, be the accurate explanation of the source of observed cases of undulant fever.

In sheep and goats, as in cattle, the infection frequently causes abortion. It may, however, localize in the udder and give rise to no signs of disease.

Among domestic animals *Brucella melitensis* infections are wide-spread. The organisms are given off in the milk, in the vaginal discharges and in the urine. The transmission of infection from animals is sometimes dependent on the use of raw milk. In an uncertain proportion, however, the disease is apparently acquired by direct contact, with the organisms gaining entrance through the skin.

Clinical characteristics. Clinicians describing undulant fever agree that it has a great variety of manifestations. This has been repeatedly emphasized by writers from the time of Marston who in 1861 gave the first description of the disease. "So variable are the symptoms and so uncertain is the duration and course of the fever that it is impossible to give a description to which all cases can be referred." (Hughes)—is the apology stated or felt by all who attempt to describe this infection. I shall mention, therefore, only its common manifestations and the usual physical and laboratory findings. Detailed reports are readily available in the literature (Kern(6), Hardy(7)) as are also many good case reports, as for example that of Howard and Reeder(8).

We have found in Iowa that the persons usually infected are farmers, packing house workers, and persons of varied occupations living in small towns. Except for packing house workers, few infections have occurred in cities and these were evidently related to a raw milk supply from infected cows. The young and middle aged male adults accounted for a majority of the cases.

The onset of the disease is ordinarily insidious, more rapid than that of pulmonary tuberculosis, but slower than typhoid. Loss of energy or strength is usually the first symptom, though headache and anorexia may be the first noted intimation of disease. Feverishness often associated with sensations of chilliness or rigors follows, and these are the complaints which commonly bring the patients for consultation.

During the course of the disease weakness is prominent and persistent. There is usually very profuse sweating, chiefly late at night. This symptom, when present, is the most striking feature of the illness. With the morning remissions in temperature the patients ordinarily feel much improved. With the afternoon or evening rise the symptoms return, commonly including headache, general aching, marked anorexia and sleeplessness. Early in the disease before the patient goes to bed, bachache and pain in the back of the neck may be severe. At any period in the illness abdominal pain may occur and be misleading. Arthralgia, particularly late in the disease, is sometimes troublesome. Almost complete freedom from pain and discomfort, particularly when the patient is being treated in bed, is not, however, uncommon.

Anorexia is the rule and constipation may be expected. A hacking cough may form a definite part of the clinical picture. Insomnia, restlessness, and irritability are the usual indications of a damaged central nervous system. Except in mild cases, there is a progressive loss of weight. Other symptoms occasionally occurring are painful urination, palpitation, and epistaxis, while the symptoms and signs of orchitis, epididymitis, mastitis, neuritis or arthritis, may dominate the clinical picture.

Frequently most perplexing in these cases is the total absence of any findings on physical examination which satisfactorily explains the patient's clinical condition. Ordinarily the patients do not look seriously ill, and for this reason may not at first be given due attention. Significant physical findings are frequently noted on examining the abdomen. The spleen may be palpable and firm. The liver also may be enlarged. Abdominal tenderness either diffuse or localized, is sometimes noticed. The findings of a bronchitis may also be present and misleading. Muscular tenderness in the calf muscles is occasionally marked. Other physical findings are variable and associated with complications.

The type of temperature curve must not be given too much diagnostic weight. It does not follow any constant and characteristic course. Undulating (wave-like) temperature records are unusual, not the rule. Ordinarily one sees daily remissions, frequently to normal in the mornings and returning to its peak between 5 p. m. and midnight. In severe cases, the malignant type, the temperature is high and sustained, whereas in mild ambulatory ones there is often little fever and this detected only by a temperature record during the afternoon or evening. The pulse curve commonly follows the temperature curve.

The urine ordinarily has no findings of significance. We have seen a few cases, however, in which many pus cells were found. These patients were treated at first for cystitis and pyelitis. The blood examination, however, often gives evidence of much diagnostic value. A mild leucopenia or normal white count may be expected, but a slight increase in the leucocytes does not necessarily rule out undulant fever. The differential counts reveal a low polymorphonuclear percentage with a definite increase in the large mononuclears. This blood change may be the outstanding feature found in the examination. The hemoglobin percentage and the red blood cell count are usually decreased, the degree depending directly upon the severity and duration of the case.

The special laboratory examinations indicated in suspected cases of undulant fever are the agglutination tests and where possible, blood cultures. A microscopic agglutination test may be performed on the dried blood, but dealing with a small non-motile organism errors easily occur. At the present time reliance should be placed only on the macroscopic test performed on the blood serum. The agglutination reaction though absent at the onset is, I believe, usually present by the time the patient applies to the physician. As in typhoid so in undulant fever, agglutination titers of 1:40 and 1:80 must be cautiously interpreted in the light of the clinical history and findings. Titers lower than this can be given little, if any, diagnostic weight, whereas finding complete agglutination in serum dilutions of 1:160 or higher is good laboratory evidence of the presence or recent occurrence of undulant fever.

Particularly to determine the strain of these organisms which cause human infections, blood cultures should be taken. To successfully culture *Brucella melitensis,* special media must be used and a proper procedure must be followed. The incubation of 48 to 72 hours ordinarily used for blood cultures invariably fails to detect the presence of these organisms. A prolonged incubation is necessary. The first subcultures may be made on the fifth to the seventh day. Growth may even not appear until ten days or later. In making the subcultures on solid media two plates or slants should be inoculated, one to be incubated in an unmodified atmosphere, and the other in appropriate sealed containers in which there is an atmosphere with an increased carbon dioxide tension. Colonies usually appear in 48 hours, but incubation should be continued for twice this period. Unless the above procedure is followed the findings may lead to erroneous conclusions. We have found it best to supply physicians and smaller laboratories with the culture media in containers which may be shipped. We request that the culture be inoculated and incubated for three to five days and then shipped to our laboratory. After further incubation, subcultures are made at appropriate intervals.

Differential diagnosis. By exaggeration of any one symptom or set of symptoms, undulant fever may similate a variety of conditions. Abdominal pain with localized abdominal tenderness suggests, for example, the diagnosis of appendicitis or cholecystitis. If the prominent feature is headache, sinusitis may be considered. The fever with pus cells in the urine, has led to the diagnoses of cystitis and pyelo-nephritis. A relatively sudden onset with rigors and suggestive findings in the lung gives the clinical impression of pneumonia. Cases with marked involvement of the joints have passed for long periods of time with the diagnosis of hydrarthrosis or arthritis. In all the above mentioned conditions undulant fever must be considered. A history carefully taken with undulant fever in mind, will greatly reduce the errors, but unless the diagnosis is quite certain a wet blood specimen should be obtained. The result of the agglutination test will be of great aid in arriving at an accurate diagnosis.

There are, however, other conditions which undulant fever closely stimulates. Undoubtedly in the past many cases of this infection have been diagnosed as typhoid or paratyphoid fever and probably have often been known by such terms as "slow typhoid" or "typhomalaria." Many features aid in differentiating between undulant fever and these enteric infections. There is an absence of the dullness and drowsiness so characteristic of the latter. The patients with undulant fever do not appear as ill and the temperature is not sustained. The drenching sweats do not suggest typhoid. Of greatest value, however, in the differential diagnosis is the agglutination test. We should, I believe, adopt and strictly follow the rule that diagnosis of typhoid should not be established without laboratory evidence. Certainly with such a controllable and effectively controlled disease, the diagnosis should not be accepted without a consideration of undulant fever. I have in mind one case of the latter which was seen by internists who carefully considered undulant fever but clinically diagnosed typhoid. The agglutination test, the isolation of *Brucella melitensis* from the blood and the later course of the infection established the correct diagnosis. This indicates how essential is laboratory aid in differentiating between these fevers.

Particularly in cases with prolonged onset, a hacking cough and some evidence of pulmonary involvement, tuberculosis will be considered. The night sweats, weakness, loss of weight, and blood differential all suggest tuberculosis. Here again laboratory methods are of greatest value in differentiating between these conditions.

The absence of any definite diagnostic findings in the presence of low grade fever may suggest focal infections, particularly of the teeth. With arthralgia or evidence of arthritis, such conditions will usually be investigated. Blood findings, both the differential and the agglutination test, will indicate the true nature of the condition.

Influenza has often been accepted as a satisfactory diagnosis in cases of undulant fever. Certainly unless this disease is epidemic and unless there are definite signs of respiratory involvement, the fever and general aching of influenza demands a consideration of undulant fever.

Though these well defined clinical conditions must be considered in differential diagnosis, still the acceptance of ill-defined conditions of unknown etiology is often the cause of error. At the present time the chief offender is "intestinal flu". For the laity this may mean a satisfactory diagnosis, but used by physicians it is commonly an acknowledgment of ignorance or uncertainty as to the true nature of the illness. Accepted medical terms such as typhoid or paratypid fever, influenza and malaria may be used in the same way. Not all such conditions are undulant fever, but a consideration of undulant fever would materially reduce these uncertainties and the inaccuracies in diagnosis. With such a simple laboratory test readily available this aid to diagnosis should be literally used. We have so frequently seen patients with an indefinite diagnosis go from physician to physician (remaining as the permanent patients of the one who establishes the diagnosis) or from physician to some healing cult, that we believe failure to consider undulant fever is often "to the detriment of the patient's health and the doctor's reputation."

Therapy. That many types of treatment have been tried and none generally accepted indicates how unsatisfactory is our knowledge of therapy at the present time. Conservative treatment is symptomatic with prolonged rest. Vaccine therapy is enthusiastically used by some, chemotherapy by others, but the specific value of any mode of treatment has yet to be proven. This is a disease self-limited and of uncertain duration. The determination of the value of any type of treatment demands observation of a large series of cases. Treatment applied late followed by spontaneous recovery undoubtedly accounts for the enthusiasm with which certain modes of treatment are used.

Prevention. There is as yet no applicable program which promises to be effective in preventing undulant fever in the United States. Pasteurization of milk undoubtedly would prevent the occurrence of some cases. The disease occurring as it does among farmers and people living in small towns will not be effectively controlled by such a measure. For the present, therefore, we must be willing to carefully gather information and to reserve judgment. Particularly must we be guarded in casting suspicion on dairy products. Our present task is to recognize and carefully study cases, and then on the basis of this information an effective plan may be formulated.

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DISCUSSION

J. A. HENSKE, M. D. (Omaha): A year ago I became interested in the literature on undulant fever, and particularly what they were doing in Iowa.

I should like to ask a few questions about undulant fever. First, what percentage occurs in children and at what ages?

Second, what are the dangers in handling the organism in an ordinary hospital laboratory? We procured the organism, but it is very contagious and it is a question whether we should handle it in our own laboratories or whether the State Public Health Service should do this work for us. I think this is important and I should like to have Dr. Hardy's views in regard to that, as his experience has been very large and he is probably an authority on undulant fever in this part of the country.

F. W. BUCKLEY, M. D. (Beatrice): I live in an agricultural district and a part of my clientele is made up of farmers and stock raisers. Some years ago one of my colleagues, Dr. Fall, called my attention to a malady occurring chiefly among adult farm folks which for want of a better term he called chronic malaria.

The symptomatology of this group tallies rather closely with the description given by Dr. Hardy except that the febrile stage is not usually so striking or clear cut while the chronic stage, characterized by asthenia, hypotension, constipation, pains of indefinite distribution and character, sweating, dull head ache, insomnia, etc., is the one generally encountered.

One constant diagnostic finding is observed, viz., the presence of actively motile organisms in the blood. They are easily demonstrated in a fresh drop of blood pressed firmly between slide and covered glass and examined with the oil immersion lens.

One of my patients was studied by Dr. Covey of Lincoln. He was able to demonstrate the motile organisms in the fresh blood, stain them in the blood smear, grow them in cultur medium, inoculate rabbits and recover them again. Unfortunately he was unable to identify these germs.

I am convinced that this disorder constitutes a distinct clinical entity, which if not a species of undulant fever, is rather closely related to it and well worthy of investigation.

These patients respond fairly well to arsenical preparations, preferably sodium cacodylate, and seem to recover normal health in one to three years.

ADOLPH SACHS, M. D. (Omaha): I feel that we are to be congratulated upon having such a man as Dr. Hardy to present a subject so important to the medical profession at this time. This disease is more prevalent in this state than the literature presents because I am sure that all cases have not been reported and many are not recognized.

Many cases of so-called intestinal grippe or atypical typhoids may belong to this group. Intestinal grippe in my opinion is a misnomer and in most instances are diagnosed as such because we do not know what is wrong with our patient.

I believe that our health authorities should make routine agglutination tests for undulant fever in case the Widal's sent in for examination are negative. In this way many cases will be picked up that otherwise would remain unrecognized.

I have been interested in a group of cases with enlarged glands and a remittent type of fever, the so-called Pel-Ebstein fever of Hodgkin's disease. This group of cases can sometimes resemble undulant fever and should be kept in mind in making a differential diagnosis. If the serum is negative then an excision of a gland will tell the story.

One should remember the three types mentioned, namely, the 1st, undulant, 2nd, the intermittent, and 3rd, the ambulatory. The undulant type with anorexia, weakness, fever, malaise, loss of weight, headache, etc. The intermittent type with fever, chills, sweats, arthritis and neuritis. The ambulatory with only slight weakness and a flushed feeling: they may not appear ill at all and one may think the illness due to focal infection.

I had the pleasure of seeing one of the intermittent type with Dr. Howard, which has been reported by him and also mentioned by Dr. Hardy today.

I should like to emphasize that it is the porcine type that is most easily transmitted to man and the bovine type less so. I would like to have Dr. Hardy tell us if the hogs and cattle being in the same yard might not be a source of infecting the udder of cows and thus transmit it to man.

I am sorry that this paper comes at such an unfortunate hour because I believe that the profession should be on the lookout for these cases so that they can be more readily diagnosed and reported.

R. D. BRYSON, M. D. (Callaway): I had the experience of taking care of a case of Malta fever this summer. My first diagnosis was typhoid fever. He asked how long he would be sick, and I told him anywhere from three weeks to three months. He had rust spots, an enlarged spleen, a typical typhoid temperature, slow pulse, and large white cell count. He was in bed from the third of July to the middle of September. One characteristic was he was always sweating. I could not understand the sweating, and told him typhoid would emphasize any disease that was present. I was fortunate in the fact the young man's father had typhoid and had been in bed three months with it.

He got well and up and around two weeks when he had another wave. His temperature went to 104 degrees. I called it influenza. Fortunately, it was epidemic at that time. He recovered and began to have joint manifestations. We diagnosed rheumatism. Then he had a pulmonary involvement with severe cough and spitting up blood. The diagnosis of pneumonia was made before I got there and I confirmed it. His blood count was 5,000. They were satisfied with the diagnosis.

At that time I read Dr. Hardy's article in the Journal of the American Medical Association. I sent a specimen and the diagnosis was made. He is working again. Still he has occasional night sweats.

I should like to ask Dr. Hardy how soon the agglutination test will be positive? As far as temperature charts are concerned, I had a rough chart made of that and it is in this building on the second floor.

FREDERICK W. NIEHAUS, M. D. (Omaha): I should like to ask in regard to suitable types of culture media. I was wondering whether ordinary brain broth would be suitable for culture?

I did not get the point clear as to how strong an agglutination would be considered diagnostic of the condition?

In regard to the dangers of handling the organism in the laboratory I have heard that there is a nontoxic strain that could be used for agglutination. I was also wondering whether killed bacteria could be used? Further as to prevention, has any work been done by inoculation with a vaccine similar to that used in typhoid?

DR. HARDY (closing): I want to thank the gentlemen who discussed the paper, and particularly for having made it apparent, that in Nebraska, as in other states, there are cases of undulant fever going under other names. Whether all these cases of uncertain etiology were undulant fever is a question, but undoubtedly many were.

We had one case in a child under five years and six or eight between ten and fifteen years of age. From that point, the number in each age group rapidly increases. The greatest number of cases are between fifteen and forty-five years of age. The only explanation for this which I can give is that the direct contact with animals plays a greater part than has been believed. Persons having this direct contact, apparently, are most likely to acquire the infection.

The possibility of cattle being infected with the more virulent hog strain we must seriously consider. Already in the limited study of the organisms isolated from cattle, we know that what is commonly called the hog strain may come from cattle. Probably in the middle western states, particularly, the control of such infections in cattle will be one of our effective methods of preventing undulant fever. There is a great deal of work yet to be done along this line. Since the hog strain is so much more virulent, measures to prevent cattle from becoming infected are clearly indicated.

I cannot emphasize too strongly the important part that may be played by laboratories in this study. I have suggested that it would be a desirable procedure for the laboratory always to examine for undulant fever the blood specimens sent in for any agglutination test. Of the first sixty cases in Iowa, more than one-half were detected by this procedure. However, as an increasing number of cases were recognized, the physicians accurately recognized the disease clinically. The laboratory can first show that the disease is present in the locality, and a knowledge of this is most important in obtaining the accurate diagnosis of undulant fever.

I believe the agglutination test is usually positive when the patient comes to a physician. The exception to this would be the malignant type with a sudden onset. You will usually, on the patients first visit to you, elicit the history of an illness of two weeks' duration or more. You must interpret the results of the laboratory tests in the light of clinical findings, but a titer of 1-80 or higher usually indicates infection. In the agglutination test, the dead organisms are ordinarily used. Br. melitensis cultured for a long time in the laboratory does lose its virulence, so strains satisfactory for the agglutination work may be safely handled. Such strains one may obtain from the United States Hygienic Laboratory.

Prevention by vaccination is in the experimental stage. I think there will be a place for it, particularly among packing house workers. There is there a definite health hazard. We must perform experimental work with immunization to determine whether it is an applicable means for prevention.

I believe, with the spread of the knowledge of undulant fever, which I am sure will occur in Nebraska, that in a year's time you will have no small series of cases. Possibly these may be collected and reported at your society meeting a year from now.

THE DIABETIC PROBLEM*

W. O. BRIDGES, M. D.,
Omaha, Nebr.

I wish to cite briefly three cases of diabetes which suggested this paper on "The Diabetes Problem".

CASE NO. 1

The first case is that of a woman twenty-one years of age, under observation three years, during which time she has taken insulin to the extent of four thousand injections. She has had three periods of diabetic coma and four periods of insulin reaction from which she has recovered under the influence of treatment from her neighboring physicians.

CASE NO. 2

The second case is that of a woman of thirty who had learned to handle her own problem in hospital. She was on a maintenance diet with twenty units of insulin daily. She went into diabetic coma, recovered after heroic insulin treatment, and it was later found that the test solution for sugar she used had become inert.

CASE NO. 3

The third case was that of a man brought into the hospital by a physician called in a neighboring town when the patient was in a state of coma. Urinalysis revealed the presence of sugar and diacetic acid. He died within six hours after coming into the hospital in spite of heavy insulin treatment. It was later learned that he had been on a diabetic diet which was indifferently followed on account of frequent changes in residence.

The epochal discovery of insulin, its acknowledged efficacy in the prolongation of life and its life-saving results in the serious emergencies of diabetes, does not in any sense solve the problem of the disease.

Insulin is not a cure, nor is diet with or without insulin a cure in the strict sense of the term. Diabetic patients remain diabetics in spite of either or both in the very large majority of cases.

It is not the purpose of this paper to discuss the diagnosis, pathology or treatment of the disease and its complications, which have been so ably presented at several recent meetings of the society, but to bring before you some points in the incidence and mortality statistics in the United States, with the hope that their consideration may lead to a realization of its increasing prevalence, and the need for more painstaking effort in prevention.

In 1907 the writer was permitted through the cooperation of the health departments of some of the larger cities, to present before this society, statistics extending over a period of about twenty years, which clearly showed a marked and steady increase in the mortality rate.

These figures now supplemented twenty years later, through the kindness of the same city registries of health, are presented to show a continued rise in the death rate from diabetes mellitus.

Deaths from diabetes per 100.000 population reported directly from the health departments of:

	1890	1900	1910	1920	1925
New York City	8.1	10.7	16.05	19.05	22.34
Philadelphia	5.4	8	14.6	16.8	18
Buffalo	6	11	17.4	22.6	20
Chicago	3.7	6.4	15.9	19	21.4
Boston	5.6	13.7	20.1	23	21
Baltimore	4.1	7	16.6	21	25
New Orleans	4	6	8	15	14
Detroit			14.8	15	17
Cleveland			13	17	15.7
Joslin, for the entire registration of the United States	9.3	9.7	14.9	16.1	16.9

That the incidence of the disease is increasing, is apparent to all of us who have been in practice twenty years or more. It is estimated that there are over one million diabetics in the United States today. Dietetic and insulin treatment are prolonging the life of these subjects, so that more children are enabled to go on to adult life, more adults to middle age, and so on. While the mortality in the younger years may decrease in percentage, it is bound to increase in the later years when there are added factors incident to the responsibilities of life, and to the complications of cardio vascular disease.

The statistical bulletin of the Metropolitan Life Insurance Company recently states, "that the death rate from diabetes mellitus is increasing despite the use of insulin. An analysis of the mortality among males for several years shows that the diabetic death rate has steadily gone down, up to age 45, and that no important change has occurred from that age up to 64 years. There has been, however, a distinct and significant rise in the death rate after the age of 65 since the introduction of insulin. Among females the decline in deaths from diabetes has been limited to childhood and early adult life. There has been a slight rise between 35 and 54, and after 55 the increase has been practically uncontrolled. In view of the fact that insulin is a treatment and not a cure, it is considered normal to expect the death rate at the older ages to increase because more of the younger patients would arrive at the older ages."

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*Read before the annual meeting, Nebraska State Medical Association, Omaha, May 16, 1929.

The problem of the diabetic then is confronting the physician with increasing intensity. Its ultimate solution must be found, not in the dietetic treatment and insulin, but in a wide spread educational program to prevent overfeeding, to forestall obesity, and to assume that the integrity of the pancreatic function must be preserved.

The prompt results in the relief of diabetic symptoms and the glycosuria from undernutrition is evidence in itself of an overtaxed pancreatic function by overfeeding. The degree of the deficiency in function may be correctly estimated by the amount of decrease in food intake which will clear the glycosuria and restore the normal blood sugar. We have here a measure of the intensity of the disease or of its relative duration. We thus have a corollary to the assumption that supernutrition is likely the greatest factor in the etiology of diabetes mellitus. Joslin's statistics clearly indicate the preponderance of the disease in the obese. In 2,000 diabetics, only nine per cent were below the standard weight zone, fifteen per cent were in that zone, and seventy-six per cent were above it. He considers diabetes largely a penalty of obesity and states "the sooner this is realized by physicians and the laity, the sooner will the advancing tendency of diabetes be checked." Dietary excesses over long periods lead to obesity. To what extent excess in carbohydrate intake in the production of obesity and diabetics is debatable. Joslin states that a high percentage of carbohydrate in the diet does not appear to predispose to diabetes, and yet his chief factor in the treatment is to curtail carbohydrate. We know that one of the chief functions of the pancreas is the secretion of insulin, which is the greatest factor in the metabolism of carbohydrate.

If the islands of Langerhans become pathological from disease insulin production is correspondingly lessened, carbohydrate metabolism is interfered with and diabetes results. Is it not reasonable to assume that merely overtaxing this function of the pancreas by continued overfeeding of carbohydrate will lead to diminished physiological activity, and is not this the explanation of the predominance of diabetes in the obese? The stated fact that in the greatest number of those dying from the disease, there are no pathological changes found in the insulin secreting structure, is strong evidence in support of this assumption.

Overfeeding does not necessarily involve an excess of carbohydrate as such in the diet, for proteid furnishes 58% its weight and fat 10% in glucose. These amounts are added to all the carbohydrate intake to determine the total glucose in the diet, but if the excess in diet is made up largely of carbohydrate as such, then we have a factor of the greater importance in its effect on pancreatic function.

To what extent the increasing consumption of sugar enters in the etiology of diabetes is a debatable point. One cannot, however, note the reports of the U. S. Department of Agriculture on sugar consumption in the United States without being impressed with the thought that the increasing prevalence of diabetes may be due in part at least to this fact.

The following table is from the reports of the Department of Ariculture:

Consumption of sugar in the United States:

Year	Pounds Per Capita
1822	9
1830	12
1840	14
1850	23
1860	30
1870	35
1880	43
1890	53
1900	65
1910	82
1920	98
1925	106

If we compare the figures of sugar consumption increase per capita from 1900 to 1925 with the diabetic death rate for the same period, as noted in our stastistics, we find the following: Sugar consumption increase 65 to 104 pounds, about 70%.

Diabetic death rate average seven cities, 9 to 20 per 100,000, about 102%.

Joslin death rate entire registration area, 9 to 16 per 100,000, about 80%.

The period 1900 to 1925 is selected for the reason that vital statistics are probably more reliable than those of an earlier date.

We are not assuming that the increased sugar consumption is the cause of diabetes, but we do believe that the figures quoted are suggestive of a most important relationship, and particularly so in view of the statistics of Emerson Larimore from the Department of Agriculture that: "Whereas the consumption of sugar has increased in the United States, that of meat has fallen in the last fifteen years from 179 to 155 pounds per capita, the replacement having been made by the use of cereals, sugar, milk and fruits."

To quote again from the Bulletin of the Metropolitan Life Insurance Company: "It has been shown again and again that the consumption of sugar and the richness of diet determine the level of the death rate from diabetes. When luxuires decreased during the world war, the death rate from diabetes decreased. Since then the disease has steadily mounted, reflecting the better times."

The sex incidence in diabetes is of considerable interest from the well known "sweet tooth" tendency of the female. Our records have shown for several years a greater percentage in women.

Joslin states that "prior to 1922, 55% of my patients were males, but since August, 1922, the females are in the majority, 55.2%". He also cites the death rate of males in the registration area of the United States for the years 1913 to 1923, as from 47 to 44 per cent of all diabetic deaths.

Doctor H. L. Rockwood of Cleveland, in his report to me on the diabetic death rate, comments on this noted fact, and states that in 1901-02, 35% of the deaths from diabetes were in women. In 1910-11, 52%; 1914-15, 53%; 1920-21, 54%; 1925-26, 64%; 1928, 63%.

These statistics from widely different sources are convincing as to the greater incidence of diabetes in the female. May we not assume that the greater tendency in women to partake more largely of sugar contained foods, plays some part in the overtaxing of the pancreatic function.

The point I wish to bring up in this discussion, is the recognition of the wide spread prevalence of, and the increasing incidence of the disease. That the mortality rate is also increasing is evidence of the failure to cure. The average general practitioner is handicapped in his relation to his diabetic patient for its a life long job, and his multiplicity of professional interests prevents his giving the time to detail of study in the long drawn out history of the individual case. I believe, too, he is not as well qualified to handle these details as he should be.

The solution of the diabetic problem so far as we know at the present time, must be found in the direction of prevention. When we consider the multiplicity of causes predisposing to diabetes, referred to in the literature, the task seems well nigh hopeless; but if we would have in mind the fact which I have endeavored to bring out, namely that in the large majority of cases habits of life which have to do with overindulgence in food and particularly carbohydrate stand out more prominently as etiological factors, it would appear reasonable that an effort in the direction of a campaign of education which would have to do with dietary excesses, with relation of food intake to exercise, with habits of over-indulgence in carbohydrate, particularly of candy and sugar in other forms, would go a long way in attaining results.

The profession of medicine today is not organized along lines which give much promise of wholesale results for the near future. It is true that a great deal has been accomplished in the campaign against tuberculosis, against venereal infections, and the splendid effort now being made to conquer cancer is appreciated; but the greater propaganda in the prevention of diabetes, of cardio vascular disease, of Bright's disease, of digestive disorders, including gallbladder, liver and pancreatic disease, must reach the daily habits of all the people through the publication of statistics, instruction in food values, the importance of exercise, the value of the periodic examination, etc.

I have previously stated that the profession is not now organized to carry out effectively such a campaign. Sporadic efforts at general publicity have not as yet been satisfactorily sustained. Bulletins from national, state and municipal health departments, and also those which are coming out of health and life insurance companies, are good so far as they go, but they are not as yet reaching the general public.

The publication of "Hygeia" by the American Medical Association and its increasing distribution to the general public, its introduction in many of the public schools and its recently announced policy of radio talks, is a great step in preventive medicine. Let us give it every support within our power.

Many of us are strongly of the opinion that the increasing prevalence of rank abuses in our professional midst, which we seem to be unable to control ourselves, is paving the way for a system of State medicine in this country, which may come sooner than we realize. If that day should come and when it does, might it not involve such a change in the relationship of the public to the profession as to permit for instance, of more direct, more effective means of prevention, for instance, in the case of diabetes?

As individuals, collectively as members of local, state and national associations, we also do not reach the public in effective combat against the propaganda of big business in the public press, which urges the increased consumption of sugar, of beef, of cereals, in fantastic form, and of many other food products merely for the sake of increasing sales.

Along this line and apropos of the present discussion, there recently appeared an advertisement sponsored by the Research Department of the National Confectioners Association in a widely circulated weekly periodical, wherein the qualities of candy were praised, to use the terms of the advertisement "because fats burn in the flame of carbohydrate" and "a diet high in sugar may be very effectively used by people with a tendency to overweight in helping them to get thin."

For the present situation the family physician occupies the paramount position from which to attack the predisposing influences toward diabetes. He should be keener in diagnosis and better qualified to manage his patient. That involves study of food values, the application of diet therapy and more than that, a painstaking effort to instruct his patient to properly handle his own case under periodic observation. The entire family of a diabetic should be under suspicion for they are subjected to the same dietetic influences, and their occasional examination would not only aid them in correcting existing faulty habits of living, but have a further influence on the afflicted. It is to be remembered that conjugal diabetes is frequent and heredity is stated to exist in twenty per cent of cases.

It should be borne in mind that thyroid disease and gallstones are frequent precursors of diabetes. To the former a diminished tolerance to carbohydrate is common, which if not interrupted by operation, may lead to established diabetes; in the latter the occurrence of pancreatic disease as a complication may have the same result. The exercise of critical judgment is here called for.

Another fact of importance to remember is, the possibility of overtaxing the pancreatic function by the system of forced feeding which is now so commonly resorted to in the "building up" of the debilitated. In the history of one of my patients now under treatment, it was revealed that the symptoms of thirst, excessive urination and glycosuria developed a few months after a six weeks period of complete rest with forced feeding, during which the weight increased sixty pounds. She has now been a diabetic over two years requiring twenty units of insulin daily to take care of a glucose equivalent to one hundred. Is it not probable that too great a load was thrust on the pancreatic function in too short a time?

Joslin reports an observation of one of his patients, who had been operated for gallstones. During convalescence his friends, knowing his fondness for sweets, sent him much candy which he ate. Three weeks later he developed polyuria and a urinalysis showed specific gravity of 1045 and sugar of seven per cent. The urine was sugar free prior to the operation. Obesity, gallstones and operation were predisposing factors, but overindulgence in carbohydrate precipitated a severe diabetes.

To summarize:

The incidence and mortality of diabetes mellitus are increasing.

Diet with or without insulin does not cure in the majority of cases.

Overindulgence in food and particularly carbohydrate are important causative factors.

The general practitioner needs to know more about specific dietetic therapy for correct treatment, and instruction in prevention.

There is need of nation wide propaganda on correct habits of living which will come sooner with State medicine.

Thyroid and gallbladder disease predisposition should be more generally considered and operative judgment critically exercised.

Forced feeding of the debilitated should not proceed too rapidly.

PRESENT DAY DIAGNOSIS*

J. C. WADDELL, M. D.,
Beatrice, Nebr.

In no department of medecine has greater progress been made than in aids to diagnosis.

The remarkable advance in our knowledge of anatomy, physiology, histology, and bacteriology paves the way for more accurate work in internal medicine. The application of physical, chemical and biological methods and the roentgen ray, to the study of diseases during life have assisted greatly in the correct solution of many problems heretofore unexplainable.

More frequent postmortem studies and the correlating of clinical and pathological findings are factors that are tending to the improvement of diagnosis.

I do not believe that there is anything that has so retarded the growth of confidence of the public in the medical profession and has so fostered the development of quackery and fads as inexcusable errors in diagnosis due to insufficient examination.

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*Read before the annual meeting, Nebraska State Medical Association, Omaha, May 16, 1929.

If we are to successfully treat our patient we must first determine what is the matter with him.

The very first essential in the correction of any physical ailment is a correct diagnosis without which all treatment is empirical and with which treatment becomes rational.

That which has characterized scientific medicine and differentiated it from the work of the faddist and charlatan has been and always will be medicines tireless pursuit of the truth which in its application to the practice of this art means its constant endeavor to make an accurate and complete diagnosis.

If we are to progress in the practice of medicine we must place diagnosis in the foreground where it rightfully belongs.

The practice of medicine today is a broader field than ever before. It includes all that science has developed and shown to be of value in the diagnosis, prevention and treatment of disease and the promotion of health.

Naturally such a broad field requires specialization. Naturally there must be close cooperation between internist, laboratory worker, roentgenologist and all fields if we are to increase our percentage of correct diagnoses and render better service to our patients.

The physician today who fails to keep case records is depriving himself of the first essential to more accurate diagnosis.

The taking of a proper history is not a simple matter. It requires a large experience and a wide familiarity with the phenomena of disease.

An experienced clinician insists when possible on taking the history himself, for while he is taking the history he is studying the patient. It is at times more important to note how a patient tells a story than what he tells. All things else being equal the physician who can best take and interpret a case history stands the best chance of arriving at a correct diagnosis.

Correct diagnosis very often depends upon what enters the doctors mind as possible when he has detailed before him a complex of symptoms and on what he does to differentiate the various possible diseases that might produce these symptoms as well as upon the direct recognition of physical signs by physical examination.

To throw open the mind's door and allow all disease to enter for consideration would not only be foolish but impossible. Each case history should lead us to arrange before the mind's eye a selected group of reasonably probable causes for the symptoms complained of and the signs discovered. It should guide us, too, in deciding what further aid by way of examination from the laboratory, the roentgenologist or other specialist is necessary. When symptoms referable to some definite part of the body have been elicited it then becomes necessary to get a complete history referable to the particular system affected.

While we must approach every case with an open mind and refuse to allow ourselves to make a diagnosis on history alone yet history often gives us an important clue, just as finding blood stained finger prints or an old hat may start a detective in his search for the criminal.

A criticism of specialists in practice is that in diagnosis they are apt to only find pathology in their particular lines.

A noted diagnostician states that some years ago, when young, he was doing a good deal of work on the blood and that he at that time was asked to substitute as visiting physician to a convalescent home for tired domestic and shop girls.

The matron of the institution met him on his first visit and said, "I hear you are specially interested in diseases of the blood". Dr. R., who was here last summer, found all the girls were gynecologic cases. Dr. C., who was here two years ago, found them all nose and throat. Now, I suppose they will all be "blood cases".

There is such a wealth of new methods and the data that can be accumulated is so voluminous that one must be careful lest he become lost in a mystic maze.

We should develop a routine in our examination which is complete without being too elaborate and add special examination as needed.

We should always take a careful history. This is more complete if a regular form sheet is followed. Second, make a complete physical examination in many acute and all subacute or chronic conditions.

In the solution of any diagnostic problem we have always felt that the patient should not be subjected to examination, which in his particular case is not indicated, but we are just as strong in our opinion that no part of the examination which is likely to be of value should be omitted.

We believe there should be the closest cooperation between roentgenologist, laboratory worker and internist and that each should tabulate his findings independent of the other and then a case conference be held. We deplore the tendency on the part of many to send a patient to the roentgenologist expecting him to make the diagnosis for them. A roentgen ray report of "no pathology found" in a case of indigestion, for instance, does not mean that the patient is well. He may have any one of a number of conditions such as hyperacidity, chronic duodenitis, colitis, early unobstructive cancer, nephritis, anemia or possibly gallbladder disease.

We all recognize the vast importance of the roentgen ray examination in many conditions if made by a roentgenologist. We feel that much misinformation in diagnosis is being acquired by men of little experience and training and partially trained technicians operating x-ray machines.

We believe that the criticism that the inadequately trained roentgenologist is over anxious to find pathology is just. We freely concede that in the hands of a well trained man the x-ray gives great assistance to the clinician.

The x-ray examination is but an aid to diagnosis and does not take the place of a carefully taken history and a thorough physical examination. We should dislike very much to attempt diagnosis in many conditions without the assistance of a roentgenologist in whom we have confidence. We feel, however, that the report of the roentgenologist should not be a few words stating a diagnosis or "no pathology seen", but should describe the x-ray deviations from the normal and then the roentgenologist's interpretations of his findings. Such a report gives the clinician something to compare with his findings and those of the laboratory and greatly assists in making the diagnosis. We feel that many ill trained operators of x-ray machines have gone wild in their improper interpretation of a number of conditions. Diagnoses of conditions such as tuberculosis of the lungs has many times been made in patients in whom the history and careful physical examination and laboratory and other tests would in no way support such a diagnosis.

It is a serious matter to make a diagnosis of tuberculosis or heart disease in a young individual.

Where such a condition is suspected the patient should have thorough and careful examination and observation.

All possible evidence obtainable should be collected.

All physicians have known young persons who have had their lives ruined by hasty diagnoses of these conditions when in truth they did not exist.

One reason for the presentation of this paper is that because of the multiplicity of aids to diagnosis we feel that the taking of a proper history and making a good physical examination is in danger of becoming a lost art. How many times does the physician slur over the examination of the chest passing on the job of determining the size of the heart or a possible consolidated patch in the lung to the x-ray. He may forget that it is possible to detect tuberculosis that the x-ray does not reveal.

We especially emphasize this because the taking of a careful history and making a careful physical examination is within the power of every well trained general practitioner and after all the history and physical examination are the basis of present day diagnosis.

The physician can no longer count the pulse, look at the tongue, write a prescription and be considered as practicing efficient medicine. He should not stubbornly refuse to accept the new nor should he be carried away by its supposed scientific accuracy. He should learn to employ the laboratory and special methods of investigation, realizing that they are many times indispensable aids to the solution of difficult problems. To be a good diagnostician a physician must not only realize his own limitations, but also the limitations of specialism.

The diagnostician must ever be a student. If he is going to be thorough in his work he must not neglect any part of the examination that could have anything to do with his arriving at the correct diagnosis.

A noted French physician once said "the main function of the consultant is to examine the rectum". The electrocardiograph, the x-ray and other instruments should not be looked upon as supplanting other forms of diagnosis, but as stimulants to more determined efforts to take better histories and make more thorough physical examinations.

We feel that too often the physician exercises too much haste in his attempt to arrive at a diagnosis in chronic conditions. A difficult problem requires time for solution. We dislike to tell the patient after short study that we do not know what is the matter with him. Nearly all patients with chronic conditions are willing to be observed and studied. After better acquaintance with the patient, his history and repeated physical examinations and indicated tests, we often arrive at very different conclusions than those of the first examination.

Observation has been undervalued. It means looking and looking again.

Another thing we must keep in mind in diagnosis is that a large percentage of the patients who come to the physician complaining of symptoms have only functional disease. As physicians we cannot deny that the influence of the mental processes over the function of the human body is great. These patients are entitled to sufficient study to enable us to definitely diagnose and classify their condition. If we can find the cause of disease and correct it we render efficient service to our patients whether it be relieving the mind of worry, correcting an improper diet, or removing a gallbladder that has been causing excruciating pain.

We feel sure that diagnosis can be very much improved by more frequent postmortem studies. We are finding that very often if the relatives of the deceased are approached in the right manner permission for this study can be readily obtained. If people are made to feel that by permitting these observations they are rendering a service to humanity they will the more readily acquiesce.

The holding of clinical pathological conferences and the correlating of the history of symptoms and the physical signs and results of laboratory and other tests with the pathology found at postmortem seems to me to be the very best present day method of improving diagnosis.

We must remember, however, that not all pathology found at postmortem necessarily has been producing symptoms.

Summarizing we would say there are two methods of diagnosis.

1. Snap shot diagnosis, or diagnosis by intuition.

2. Diagnosis by careful study of the patient.

3. While occasionally brilliant and spectacular diagnoses have been by the former method by far the largest percentage of correct diagnoses are made from careful study of the patient.

4. The time was when the physician considered it a reflection on his ability as a diagnostician to ask the patient questions as to his symptoms or get information from other physicians. Physicians are coming to realize that in many conditions they need all possible assistance if they are to reach proper conclusions.

5. The laboratory, the x-ray, the electrocardiograph, and special fields of medicine are very often needed in present day diagnosis.

6. Lastly, we feel that there is a safe and sane position that may be taken by the diagnostician. The history and physical examination must be the basis, and special examination added as needed to elucidate the particular case.

PRESENT DAY DIAGNOSIS

Discussion: W. W. Arrasmith, M. D., F. A. C. P. (Grand Island):

I have been very much impressed and encouraged by the Dostor's paper and wish to compliment him on it. It indicates the work of a careful, thoughtful clinician. I particularly like his statements with respect to cooperation with the pathologist, physiologist and the other specialities generally. I think we are ready to recognize the fact that not one of us is infallible. We, consequently, must lean upon the other fellow. On the other hand, we find the tendency, when we refer the case to the nose and throat men, that all the pathology is to be found in the parts of the anatomy surveyed by him. Likewise, when we refer it to the eye man, he in turn finds the pathology existent in the eye or contiguous parts. It, therefore, makes us wonder if in the final analysis we should not take into consideration what the man who originally sees the case thinks about it.

Some one has asked the question: "What is an internist?" The answer might be: "He is that which is left after all the specialities have been taken out of the field of medicine." I often wonder if that is not true. I believe it is not as much of a problem for the internist to weigh carefully the opinions of the various specialists, thoughtfully and carefully summarizing them, and in the final analysis develop a rational diagnosis.

Dr. Waddell has so thoroughly and briefly covered his subject that his paper requires little discussion, other than the reiteration of a few points.

I feel the time element in the matter of the modern diagnosis is considerable. Too often we see a patient, carefully get a history, conduct a very complete physical examination, study our laboratory summary, and in the space of a few hours, render a diagnosis. This is possible in perhaps a majority of cases, but aren't we slipping in that we do not take this patient under a more or less constant observation, perhaps a brief period of hospitalization, when we can secure a graphic daily summary of the temperature, pulse, respiration and fluid balance? Perhaps a point not mentioned by Dr. Waddell is a matter of the therapeutic diagnosis. How many times would an exploratory laparatomy for a gallbladder condition, a cardiospasm or pylorospasm, or a myriad of other subjective symptoms, have been defeated, had we been inclined to supply the patient with a pearl of amylnitrite for the anginal attacks that he had been having? On the other hand, a routine Wasserman would have cleared many questionable diagnosis, surgical and medical. Failing in a positive Wassermann, yet with the clinical manifestations of remote symptom complex, a provocative neo has many times given the Wasserman reaction and thus cleared many a situation.

With reference to the allusion made by the essayist in the matter of the so-called "neurotic" individual, I believe our chiropractic friend, who places all his eggs in the basket of a misplaced or mal-articulated vertebrae, is to be no more criticized in his delusion than are those of us who hastily study the neurotic patient and carelessly and harmfully prescribe day after day some form of sedative to our gullible patient. There is a certain pathology back of every neurotic case. That is rather a dogmatic statement for one so young in the practice of medicine to make. Yet I am satisfied when we write "neurosis", we are simply admitting our own defeat. These patients require the study of a skilled psychiatrist. I believe all of us neglect that phase of medicine in our reading too frequently, and are more inclined to rely upon some individual in a metropolitan center to ultimately work out for us a psychoanalysis, of these cases. I heartily concur with the Doctor that a complete general examination is absolutely imperative. We owe it to our patient to exhaust every physical resource we possess, and every laboratory measure where there is a bewildering symptom complex. I do not believe we should be reluctant to call in the individual specialist on any case—the nose and throat man, the psychiatrist, and the surgeon. The individual opinions or the collective opinions may lead up from bewilderment into thorough understanding of an individual case.

I wish again to reiterate that I have enjoyed this splendid paper. We need more of this injected into our society meetings. All of us are inclined to get into the rut of hastily passing over what appears to us to be insignificant cases, and yet ultimately develop into cases of a major matter.

I thank you.

HAY FEVER*

E. T. MANNING, M. D.,
Omaha, Nebr.

If a census were taken of the practicing physicians who concerned themselves with hay fever, there would probably be two distinct opinions: one, that modern management of hay fever is of absolutely no value whatever; and the other that 100 per cent of hay fever patients should be cured. Each opinion reflects the personal experience of the physician. It is pretty hard to determine just what the value of the therapeutic measure is, especially when for years and years we have been considering this disease as a pure neurosis. I do not know of any disease where you can deceive yourself easier as to the value of therapy than in hay fever. However, laying aside all possible nervous elements in it, we know there is a disease entity known as hay fever.

What is the reason for these discordant opinions? I remember fifteen years ago when I first started work with hay fever, we made our own extracts from pollen secured in the vicinity, with indifferent results. If we got 25 per cent good results, we were doing well. About that time there was a demand for the pharmaceutical houses to furnish extracts. They made extracts and forced them onto the general practitioners who were not familiar with their use. The detail men furnished a set rule for treating hay fever with these extracts. It is not to be wondered that the results were so faulty.

There is another reason why the treatment of hay fever is so varied. We do not know anything about the chemistry involved in hay fever. What do we know about it then? We know that hay fever is caused by absorption of certain pollens from wind-pollinated plants. We do not know what the active principle of the pollen is, but we assume it is protein. Yet there are many experimental facts that point against its being protein. We do not know why one individual will have hay fever and another will not. We group the distinguishing features into one word and call it "allergy."

Then the question arises, "What is allergy?"

We say it is the altered relation between the noxious agent and the antibody produced in the body. What do we know about allergy? We know that this altered reactivity is inherited according to Mendel's laws as a dominant characteristic. You will be surprised at how many you will find with some taint in their ancestors. This allergic phenomenon has various manifestations. We do not know how many. We are practically sure of a few: Hay fever, asthma, eczema, and urticaria. When you go through your patient's history you will find that some of the ancestors have one of these various phenomena. The individual will tell you that hay fever started on a vacation when he had a large exposure to pollen.

I am not going into the pathogenesis of hay fever, because I do not know anything about it, and neither does anyone else. There is a great deal of experimental data of very little valuable interest. So far as we know, the active principle of the pollen is not a true toxin, for there is very little permanent immunity established by treatment, so far as we can prove at present. We believe that the effect of the treatment is to produce a temporary tolerance. There is a refractory period established lasting from twenty-four hours to a week, which then disappears, but is brought back by another injection of the noxious agent sufficiently large to produce the tolerance again.

The whole subject, as far as the active principle of the disease is concerned, is exceedingly vague. Hay fever is produced by absorption of pollen from wind-pollinated plants—not insect-pollinated ones. Some of the trees, which pollinate early in the spring, are in this group. However, tree hay fever is mild and of short duration. Next in time of pollination are the grasses—particularly timothy and blue grass. Ragweed is next. Ninety per cent of hay fever cases are caused by ragweed—not goldenrod. Why? You say, "I, myself, have goldenrod brought into the room and get an attack of hay fever." Possibly. Most usually this is not due to the goldenrod pollen, but probably to the bringing in of wind-borne pollen along with it. The ragweed pollen is light, and the goldenrod pollen is heavy. Skin tests will give goldenrod almost universally inactive. The patient with the sensitive mucous membrane who is sensitive to ragweed is sensitive to goldenrod by mechanical irritation.

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*Presented to annual meeting Nebraska State Medical Association, Omaha, May 16, 1929.

Another pollen in this vicinity is the Russian thistle. The grain men say it has been brought into this immediate vicinity by the alfalfa. We are having an increasing number of patients sensitive to the Russian thistle.

I used to think that asthma in connection with hay fever depended on the severity of the sensitization. I am now practically certain it does not. It is certainly one of the manifestations of the allergic phenomenon, and does not depend on the degree of sensitization of the hay fever individual, or the kind of pollen he absorbs. There are patients who have asthma only during hay fever season. Last year I had seven hay fever patients with asthma. Without exception on the same date they would all say, "I had asthma last night." There must have been some common cause. I have a strong suspicion that atmospheric pressure and not relative humidity is concerned in this cause. Asthma as a result of hay fever should be regarded as an allergic phenomenon and not the effect of the hay fever alone. You will see a number of cases of hay fever with severe symptoms and no asthma. Again, you will find light hay fever symptoms and severe asthma.

Why do we have discordant results in pollens from pharmaceutical houses? Do they make up the solutions accurately? Of course they do. We know there is local variation in the noxious element contained in pollen. You have had the experience of a ragweed hay fever patient who will go two hundreds miles from home and be free, and still be in the ragweed district. That can only mean variation in the local ragweed pollen. It is not unusual to have extract which is made from local ragweed pollen cause a definite skin reaction on a hay fever patient but when an extract of the same pollen obtained from the pharmaceutical house is used, that patient is negative to it. I believe that this variation is operative in 25 per cent of cases.

As to the means of diagnosis in hay fever, the skin test is of least importance. A person who relies on it is going to miss a big majority of cases. We are too prone to rely on actual phenomena rather than on the case history. Thus it follows that a knowledge of the date of pollination of the hay fever plants concerned is of vital importance. Unless the onset of the symptoms coincides with the date of pollination you may as well leave the skin test off. This idea of putting forty to eighty skin tests on a patient is absurd unless a careful history is taken and the symptoms justify it. It is not rare to fail to make a diagnosis, after which the patient will go to another doctor, who may say, "This patient is sensitive to almonds and peanuts," when he hasn't eaten them for years.

It seems to me that unless your history points toward these particular allergic phenomena, you are wasting time with promiscous skin tests. Time after time we have patients brought to us with the request, "Will you make these skin tests?" How can they have application unless the things tested for occur within his environment? You must know the date of pollination of the different plants and get a careful history of the onset of symptoms, and you can eliminate all but three or four causes immediately.

For fifteen years we have been watching the dates of pollination of hay fever plants, and it is remarkable how uniform they are. A man would say, "My hay fever begins at twelve o'clock on the twelfth of August." That is not such a joke. Within twenty-four to thirty-six hours, year after year, the ragweed pollen will appear. Some government man has advanced the opinion that it is due to the height of the sun, not to weather variations. It sounds logical to me, because there is so much less variation in the height of the sun. With a careful history, we can cut down our necessity for skin tests to five or six if we know the onset of pollination.

It does not make a great deal of difference whether you use the intradermal or the scratch method of making skin tests. I prefer the former because I think you can manage easier the amount of the pollen injection, and thus get more idea of the degree of sensitization.

A very important feature of the skin test is the presence of group reactions. In this climate we have three varieties of ragweed—the Giant, the Western, and the Small. A patient's symptoms may begin on the twelfth of August. You can then eliminate the Giant and the Western ragweed, because the Giant pollinates the 25th of July, and the Western pollinates the first week of August. Therefore it must be the Small ragweed, even though the patient will show a positive reaction to all three—group reaction.

One of the reasons why your treatment may not be satisfactory is the fact that you are treating with a mixture of the ragweeds. It is like the old shotgun prescription. You do not know about the relative amounts your patient should be given, since they depend upon the ragweed to which he is most sensitive. Sometimes your hay fever patient will come to you July 28. He will be doing well under treatment. On the twelfth of August his symptoms reappear. You are increasing your dose to take care of the mild sensitization, but your dose is not nearly large enough.

We can talk about hay fever with reference to the patient's sensitiveness to ragweed because it applies to other pollens as well. The treatment is to gradually increase injections, either intracutaneous or subcutaneous, of the pollen extract from the noxious weed involved. I prefer the intradermal method because I can watch the reaction better.

In conclusion, what shall we say regarding the present status of the management of hay fever? In my opinion the results of hay fever treatment will be in direct proportion to the amount of time and attention that the physician can and will give to his patient. Certainly at present there is no standard method of treatment. The physician must perfect himself in the technique of determining the specific pollen to which the patient is sensitive, and then he must vary the treatment to fit the individual need of the patient. If this is done, I think practically all patients will be able to secure at least partial relief from their symptoms.

DISCUSSION

MILES J. BREUER, M. D. (Lincoln): I agree with Dr. Manning in that results are possible in the treatment of hay fever. If a man buys fifteen vials put up in a box from a pharmaceutical house marked "One to four to be given", and gives them with his eyes shut, it is not surprising he gets poor results. I do not see how it is possible to expect results unless you locate the proper pollen and determine the correct doses. Unless you can get reactions from your treatment and adjust the doses by these reactions, increasing fast enough to get a slight reaction, and not fast enough to make him sick, don't be surprised if you do not get results. It must be worked out scientifically. I think it is possible to get results if handled properly.

Don't expect a patient's hay fever to be due to any plant with a conspicuous flower, such as the goldenrod. It is an insect-pollinated flower. Any flower that is attractive in order to bring insects for the purpose of distributing pollen is not to be considered as a factor in producing hay fever. The flowers that cause hay fever are the ones with pollen distributed by the wind, and have small, unnoticeable flowers.

S. A. SWENSON, M. D. (Oakland): I enjoyed the Doctor's talk very much. I agree with everything he said. I am a sufferer myself. I have been working with it for the last few years more or less and trying to alleviate the symptoms in my patients, as well as myself.

I should like to ask Dr. Manning as to the exact time in this locality the wormwood pollen begins? I have been unable to find it in literature. I have a patient exceedingly sensitive to the wormwood group and have not isolated the particular plant to which he is sensitive.

My hay fever starts about the first of July. I am not real sure what plant is the causative factor in the early stage of the game. I am sensitive to ragweed but not in a high degree.

I agree with Dr. Manning as to his statement the degree of sensitiveness is not proportional to the degree of the asthmatic symptoms. I am not highly sensitive to any of the pollen I know of—somewhat to ragweed—but have rather distressing symptoms of asthma at times.

I should like to ask Dr. Manning as to how careful he is in gauging his dosage? My opinion is you must gauge it carefully. Of course, you should not have any general reaction.

Another question in my mind is: Is it possible to have hay fever due to insect-pollinated plants? I had a patient sensitive to maple. It is not wind carried. I have treated him for several seasons with maple pollen extract, and apparently he gets some relief. His hay fever comes early in the spring—about March or April—with no grass pollinating. It must be a tree pollen.

E. L. McQUIDDY, M. D. (Omaha): I want to compliment Dr. Manning on his address. What is the condemnation of the present system of the treatment of hay fever as prescribed by drug houses? If there is one thing that has thrown the treatment of hay fever into disrepute, it has been the indiscriminate treating of hay fever by extracts put out. In the first place, you are not sure you are treating with the right extract and that you are giving the proper dosage. Every person is a law unto himself. One person will react to a dilution of one to one hundred eighty thousand, and another to one to eighty thousand. There is a wide variation. The drug houses cannot take care of the individual condition.

There are a few points with which I take exception to Dr. Manning. One is in regard to the number of weeds concerned with the average hay fever. We have a group of weeds which in my experience have been factors. It is true that ragweed is probably the most important. Second is the Russian thistle. In Nebraska we are concerned with other weeds which must be brought into consideration. The burwood species, especially cocklebur, cannot be omitted. Around Omaha we must consider hemp as a potent factor. Marsh alder must be brought into the discussion. In those localities where there is much low water, the western water hemp must be considered. In Omaha, I have picked up two patients whose hay fever has been due to western water hemp. If we do not test with these other weeds, we will miss those cases. They lower the proportion of the ragweed as the causative factor.

The thing you will run across, I am afraid, will be you will test the patient and find him slightly sensitive to ragweed, and think it is the causative factor. Yet, if you had tested with hemp, you might have obtained a reaction ten times as great as to ragweed. We find a slight reaction and call it the causative factor, and it is not the main factor in the condition. I plead for the doctor using a group larger than the average house puts out. In grasses, the thing that has thrown our treatment into disrepute is that we have not considered blue grass, and it cannot be thrown out of consideration. It is more important than timothy, in my experience.

In regard to the skin test, Dr. Manning takes one thing and I take another. I cannot consider the value of skin tests as lightly as he has considered them. I am afraid I will go on using more skin tests than he recommends. Because I use more, I have picked out those cases treated with ragweed pollen where they have not obtained results. If we take those things into consideration, our results will be better.

Make a little survey of your locality and see what the weeds are that are around you. I have made the survey four times around Omaha in the vicinity of twenty miles, and we have listed the weeds around here. The date of pollination is fairly exact. We cannot be mislead entirely. Sometimes there is variation and we may get some of the weeds pollinating on a certain date and get it in order, but the bulk may come a few days later. It is possible to be misled about the date of pollination to that extent. It is those things I like to emphasize in the treatment of hay fever. We have something really vital in the present treatcent of hay fever. It can be successfully treated in a large percentage of cases, and the percentage of cures in the hands of all of us should be raised if we go at it more carefully.

H. W. FRANCIS, M. D. (Bancroft): I was interested in the Doctor's address. He stated some government official said the height of the sun had something to do with the date of pollination. In the district where we live my wife is a sufferer from this disease. I have noticed in a dry season if we have a drought for ten days, the pollination is advanced. It seems to be more active. She will suffer more. Some patients will move two hundred miles and get relief. That is because they drop into a community with lots of wet weather and the pollen is not as active. If you watch it, you will find the pollen is more active in a dry season.

DR. MANNING, (closing): The dosage, like the giving of any other drug, is of course variable. There are not two people who require the same dosage. You must give a dose sufficiently large to relieve the symptoms. The reason I like intradermal injections is because you can tell from the local reaction when your dose produces the stage where the symptoms will be relieved. You should not make your first dose too large. Increase it until you get a local reaction the size of the palm of your hand, which will last twelve to twenty-four hours. Do not go beyond that. I am convinced there is a relation between the size of the dose necessary to protect and the amount of pollen the patient is absorbing at a given time, and the amount varies from day to day.

Apropos of the doctor's dry season: Temperature is the important thing. I have charts made giving the size of dose necessary to protect the patient each year. I think the rainfall, or even wind velocity, is not the important factor, but the temperature. That is reasonable. If it is hot and dry, the pollen will dry immediately and be carried easily. When it comes off the plant, it is moist and relatively heavy. If the sun is high, it will dry and be thrown quickly. That is why your dose must be sufficiently large to protect against the amount of pollen in the air at a given time.

Here is a peculiar feature. You will give a dose that will protect for three or four days. The patient exposes himself to a large amount of pollen. The injections you have given in different places three or four times back will come up again after exposure. You will give a dose nearly as large as at the beginning. It is large enough to protect. You will be surprised to see the local reaction you have obtained three times back come up again. There is an intimate relation between the amount you inject and the amount of pollen to which the patient is exposed. In the other method, if you get a general reaction your dose is too large. Look out for shock in intradermal reactions. You must come to the edge to get results. We can use the pharmaceutical product, but we must treat the individual patient. Dilute it according to the patient's indications and the shock preparation is all right.

THE IMMEDIATE MORTALITY AND THE LATE FUNCTIONAL RESULTS OF PERINEAL PROSTATECTOMY*

Review of two hundred twenty-one consecutive cases.

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The value of a given surgical procedure may be determined only by a consideration of (1) the immediate mortality rate, and (2) the late functional results. Data for such a purpose may be best obtained by an analysis of a series of similar cases, handled in the same manner, and preferably by the same diagnostician and the same surgeon. The larger the series, the less the inaccuracy in the conclusions. This paper deals with the results of perineal prostatectomy. It is my purpose briefly to present two charts summarizing the immediate and the late results in a consecutive series of 221 cases of perineal prostatectomy under sacral block anesthesia. Since this paper is intended merely as a brief presentation of operative results, all details of diagnosis, preparation and operative technique have been purposely omitted. In a recent publication(1) I summarized the immediate and late results in a series including 176 cases of perineal prostatectomy under sacral block anesthesia. The tables here presented include the above data, plus the additional information gained from 45 subsequent cases, similarly handled.

IMMEDIATE OPERATIVE RESULTS

Prostatectomy is no longer the hazardous procedure of former years, with a mortality rate of twenty, thirty or forty per cent, although this idea still persists to a very considerable degree. Authentic figures, available from several urological clinics, go to prove that the risk of this operation, during comparatively recent years, has been reduced to almost nil, so that the statistics of prostatectomy, upon the aged, may now compare very favorably with (for instance) the statistics of herniotomy, upon the young and robust. There are three essential factors, which have contributed largely toward this conspicuous lowering of the mortality rate of prostatectomy. These are (1) proper pre-operative preparation, (2) sacral block anesthesia and (3) complete hemostasis.

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*Read before the joint meeting of the Lancaster County and the Douglas County medical societies in Lincoln, February 19, 1929.

TABLE I

Perineal Prostatectomy Under Sacral Anesthesia Immediate Results

Total consecutive cases	221
Average age	70
Above eighty	16
Deaths	5
Total consecutive cases with no deaths	121
Sacral anesthesia (number of failures last 95 cases)	0
Rectal injury	1
Post-operative "shock"	0
Delayed hemorrhage (several days)	6
Epididymitis	28

Preliminary Drainage. The first, and the most important of these, preliminary drainage, is a subject which has been dwelt upon in recent years in many publications by competent authorities, and the importance of which has become too well recognized to require discussion at this time. The neglect of this most essential phase of the subject of prostatectomy will have, as its inevitable consequence, an appalling mortality rate.

Sacral Block Anesthesia. It may be stated without exaggeration that the sacral block method affords an almost ideal form of anesthesia for perineal prostatectomy. This method is also admirably suited for suprapubic prostatectomy, although, for this route of approach, additional local infiltration anesthesia of the abdominal wall must be provided. It is quite important to point out with emphasis that sacral anesthesia *differs essentially from spinal anesthesia* in being *extra* dural, while the latter is *intra* dural, and carries with it a certain hazard of its own. Other than this statement, the details of technique of sacral anesthesia have been purposely omitted since this subject has been fully covered elsewhere(2).

Assuming familiarity with the technique, the complete sacral block injection may be carried out with comparative ease in about ten minutes' time. The risk is negligible, in that there has not been an anesthesia death during the entire series; neither has there been a reaction of consequence. Although slight reactions, characterized by a moderate drop in blood pressure and by more or less pallor and perspiration, and more rarely by nausea, are not uncommon, there has not been a single instance in which the reaction was in any measure alarming.

The chief objection to this method in the hands of different observers, has been the rather small percentage of cases in which there has been inexplicable failure to produce satisfactory anesthesia. The figures here presented, and those presented in a former paper published in 1924, are of interest in this connection, and tend to throw some light upon the cause of this occasional failure. In this former paper(3) a series of 30 consecutive cases of perineal prostatectomy under sacral block anesthesia was reported. Among this series, three were complete failures, while four required additional gas inhalation anesthesia during the final stages of enucleation. Thus, seven out of 30, or 23.3 per cent, were unsatisfactory for reasons not understood. In the present series, there has not been a single case requiring auxillary gas inhalation anesthesia during the last 95 consecutive cases; and out of the last 100 cases, gas has been necessary during the final stages of enucleation in one instance only. Thus the percentage of failure has been reduced from 23 to one per cent. Since in all instances the same drug in the same concentration has been employed, and since there has been no deliberate modification in the technique of injection, the only logical conclusion is that through practice, the anesthetist has learned to place the needles more accurately. In other words, it is possible for the anesthetist to be mistaken in considering that the needle point has been properly placed within the caudal canal or in the foramina, and the percentage of failures may thus be adequately explained upon a technique basis, without recourse to the various anatomical and physiological theories which have been advanced. It may, therefore, be conservatively stated that sacral block anesthesia for perineal prostatectomy is free from risk and is uniformly efficient when properly administered.

Hemostasis. In addition to the group of prostatectomy deaths due *directly* to hemorrhage, there is another larger group in which death later results *indirectly* from hemorrhage, by reason of infection secondary to lowered resistance. The importance of hemorrhage as a mortality factor is probably underestimated by reason of failure to recognize the primary cause of death in this second group of cases. The necessity for detailed attention to *complete* hemostasis, therefore, cannot be overemphasized, and for the same reason, haphazard hemostasis in prostatectomy will have its inevitable consequence in a certain percentage of cases. It is quite true that the majority of patients, properly prepared, will survive by the trust-to-luck method of hemostasis, but if the minimum mortality rate is to be achieved, this important item is not to be overlooked.

Prostatectomy may ordinarily be accomplished with very little bleeding, and in many instances, the operation may be made almost bloodless, as the result of (1) the opportunity for deliberateness in controlling individual bleeding points in and around the prostatic capsule by suture and ligature, through the time afforded by the use of sacral anesthesia, and (2) the use of an inflated hemostatic bag for the purpose of controlling hemorrhage during the first few post-operative hours. For this latter purpose, in all the cases here reported, a perineal prostatic bag, described in a previous publication(4), was employed.

It may, therefore, be stated without exaggeration that, with proper attention to preparation, anesthesia and hemostasis, the problem of the immediate mortality of prostatectomy may be considered to be satisfactorily solved, *with one reservation only.* I refer to *delayed hemorrhage*. As may be noted in table I, this complication has occurred in six cases out of 221. Sudden, profuse hemorrhage, occurring as late as the tenth post-operative day, and interrupting an otherwise smooth convalescence, is a menace which may be neither forseen nor prevented, and which occurs probably as the result of infection and slough. This constitutes a grave emergency, in that its seriousness may not be recognized until the patient has gone into collapse. Hemorrhage of this character is a complication which should not be temporized with and which calls for immediate reintroduction of a bag or pack. In four of the above cases, an immediate suprapubic incision was made under local anesthesia in order to permit evacuation of clots and the introduction of a Hagner bag. Hemorrhage of this character was indirectly responsible for one of the five deaths in that the patient's resistance was lowered by loss of blood to such an extent that gangrenous infection of the incision set in, resulting in general sepsis and death ten days later. Of the other four deaths, one was due to embolus, two to renal insufficiency, and the other to acute cardiac decompensation, occurring on the sixth post-operative day.

SUMMARY

The immediate operative results are shown in table 1. Although there were 121 consecutive cases without a death, there were five deaths in the entire series of 221, a mortality rate of 2.2%. The age figures (average of 70, and 16 above 80) are undoubtedly fairly accurate, but are not representative of the entire series, in that these figures were compiled from 100 consecutive cases only.

With respect to the dependability of sacral block anesthesia, it is to be particularly noted that the necessity for additional gas inhalation anesthesia has arisen in not a single instance in the last 95 consecutive cases. As pointed out above, however, sacral anesthesia failures were much more frequent earlier in the series. There were three failures in the last 150 cases, *and seven failures in the first thirty.*

The one case of rectal injury at operation did not result in the development of an urethro-rectal fistula because the urinary stream was diverted during convalescence by suprapubic aspiration, and because the location of the lesion was very low down upon the anterior rectal wall, just above the sphincter ani. This was due to an avoidable technical error at operation.

The subject of *delayed* hemorrhage, occurring about the tenth post-operative day (6 cases) has been discussed above.

There were 28 cases of post-operative epididymitis, occurring during the first six weeks. This figure is too high, since epididymitis, occurring toward the end of a long period of hospitalization, when the patient's morale has all but been exhausted, is a very trying and discouraging complication. For this reason I have since adopted preliminary bilateral vasectomy as a routine prophylactic measure, and shall subsequently publish comparative figures.

LATE FUNCTIONAL RESULTS

Table II summarizes the late functional results as determined by questionnaire blanks returned from 100 consecutive patients. This data was compiled during May, 1928. On account of the recognized impossibility of communicating with all of a consecutive hundred of these patients, 125 questionnaire blanks were sent out. From the replies, those of the last consecutive 100 patients operated upon were selected. In order to avoid complications and misunderstandings, only the following simple, direct questions were asked.

1. Is the wound entirely healed?
2. Can you control the urine?
3. Do you pass urine too often?
4. How many times do you get up at night to urinate?
5. Does the urine pass without difficulty?
6. As far as the operation is concerned, do you consider yourself
   (1) well, (2) improved, or (3) unimproved?

The last question, number six, was considered to be the most important, since this was for the purpose of obtaining a voluntary expression of the patient's *own* opinion as to the result of the operation. As shown in table II, 81 of these patients unequivocally state that they consider themselves well, while there are 15 improved and four unimproved. An analysis of this data indicates that the majority of those in the improved group consider themselves not entirely well on account of varying degrees of frequency of urination. In this connection it is to be noted that in a post-prostatectomy series, there would necessarily be a fair percentage of cases of advanced pyelonephritis and other chronic infections such as to prevent all possibility of the return of the urinary tract to normal. Therefore, even after the obstructive symptoms have been done away with by prostatectomy, the persistence of urinary frequency in a certain percentage of cases is inevitable. The average intelligent patient, however, recognizes that relief from obstructive symptoms is more essential than relief from minor degrees of urinary frequency. This is demonstrated by table II. Although only approximately 60% of these patients report themselves as being disturbed as few times each night as once or twice (or not at all), as many as 80% voluntarily express themselves as being well.

TABLE II

Perineal Prostatectomy Under Sacral Anesthesia
Late Functional Results

Total consecutive cases questioned	100
Time elapsed since operation	3 to 24 months
Patient's own opinion:	
Well	81
Improved	15
Unimproved	4
Incontinence:	
Complete	0
Inconvenient	2
Slight	2
Nocturia:	
Not at all or once	43
Once or twice	21
Two or three times	25
Four or more	11
Urinary fistula:	
Complete	1
Slight	4
Recto-Urethral fistula:	
Immediate	0
Late	1
Retention of urine	1

The question of post-prostatectomy incontinence is a subject deserving careful consideration. Although there was no case of complete incontinence in this series of 100, there were two with a sufficient degree of incontinence to be a cause of considerable inconvenience. While each of these patients has intervals of complete dryness and has the ability to start and stop the urinary stream at will several times while voiding, there is a weakness of the external sphincter, as indicated by leakage, at intervals, of small amounts on any undue exertion, such as coughing or sneezing or suddenly rising. Since these patients have intervals of complete dryness, and since they have the ability voluntarily to start and stop the urinary stream, it is evident that a sphincteric structure exists and it is, therefore, logical to consider the possibility of individual anatomic variation in the musculature or innervation of the external sphincter. I have under observation at the present time a patient with this identical type of sphincter weakness following suprapubic prostatectomy. In this connection, I do not intend to minimize the possibility of external sphincter injury by the perineal operation. It is to be frankly stated that this is a very real danger, particularly in those cases in which the internal sphincter has been rendered functionless by the gland itself. In addition to these two, there were two others with slight degrees of incontinence. It is likely that in at least some of these four cases, the unsatisfactory control resulted from technical error at operation.

The one case of complete urinary fistula resulted from the formation of a fibrous stricture or septum at the apex of the prostate. Since this condition has subsequently been restored to normal by internal urethrotomy, this fistula no longer exists. The four patients with slight perineal urinary leakage each complained of the escape of a few drops of urine at intervals through the perineum at the time of voiding. In each case, this condition existed over a period of several months. Three of these have been subsequently cured by a secondary minor plastic operation. The other one has been lost sight of.

There has been no case of immediate post-operative urethro-rectal fistula. One patient, in a very debilitated and weakened condition, had a long, protracted convalescence associated with perineal pain and an elevated temperature over a period of three or four weeks. Five weeks after operation, he developed a leakage of urine into the rectum, this fistula having occurred presumably as the result of a periprostatic abscess.

The one patient having post-prostatectomy retention of urine was found at autopsy to have an unsuspected vesical carcinoma, situated in the region of the prostatic orifice.

Table III, which is similar to table II, in that its purpose is to summarize the late functional results, based upon questionnaire blanks received from a *second* series of 100 consecutive patients, is incomplete in that replies from only 44 patients have been received since the presentation(1) of table II in June, 1928. It is to be noted that the percentage of patients considering themselves well (82%) is approximately the same as that in table II. It is further to be noted that one of these patients has excluded himself from the well group merely by reason of "swollen ankles". There are no patients in table III reporting themselves unimproved, and there are none with perineal urinary fistulae. There is, however, one case of urethro-rectal fistula, which developed on the tenth post-operative day, although the rectal wall was intact at operation (as determined by an examining finger just prior to wound closure), and, although there was no evidence of urethrorectal communication during the first nine post-operative days. The cause of this fistula remains unexplained. It was noted, however, at operation that, in addition to the prostatic hypertrophy, there was also a prostatic abscess, containing about one drachm of thick pus. It is possible that this abscess was a factor in producing a slough through the rectal wall, although this case must be recorded as one of urethro-rectal fistula secondary to prostatectomy. It is planned to repair this fistula by the Young-Stone technique, as previously described(5).

TABLE III

Perineal Prostatectomy Under Sacral Anesthesia
Late Functional Results—Based Upon 44 Replies
Received Since June, 1928.

Total replies received	44
Patient's own opinion:	
Well	36
Improved	8
Incontinence, slight	1
Urinary fistula	0
Urethro-rectal fistula:	
Immediate	0
Late	1

With respect to the question of urinary control, there is one patient in this second series who reported difficulty in this respect two or three months after the operation. A letter just received from his doctor, however, states, "He tells me that he still has some difficulty in control, but that it is much better than when he left the hospital. He is entirely satisfied with the operation." We may, therefore, classify this patient as one with a slight degree of incontinence. In addition, there is one patient in this latter series who replies, "pretty good" to the question concerning urinary control. I have definite knowledge, however, that this patient is, at the present time, doing hard labor without the necessity for making any provision for urinary leakage. There is, therefore, no reason why he should be classified as incontinent.

Summary of Tables II and III. The percentage of patients considering themselves well (about 80%) is approximately the same in each series. Of a total of 147 replies received, four classify themselves as unimproved.

There is no patient in the entire series with complete incontinence. There are, however, two patients with a sufficient degree of incontinence to be a cause of considerable inconvenience, and three with slight incontinence.

The total series includes five cases of perineal urinary fistula, one of which healed following internal urethrotomy and three of which were closed by excision of the fistulous tract. The fifth has been lost track of. In addition, there are two cases of urethro-rectal fistula, developing on approximately the tenth and thirty-fifth post-operative days respectively, neither of them the result of direct operative trauma, as nearly as could be determined. In the one case of gross operative injury to the rectal wall, healing was obtained without the development of an urethrorectal fistula.

CONCLUSIONS

1. Present day methods (preliminary preparation, sacral anesthesia and hemostasis) are such that prostatectomy has come to be a benign procedure with a mortality rate that is almost nil. (2.2% in 221 cases).

2. Assuming proper attention to the above details, the chief hazard of prostatectomy is that of sudden, profuse and exsanguinating *secondary* hemorrhage occurring as late as the *tenth* post-operative day. This hemorrhage should be treated as an emergency measure and should be checked by mechanical means even though a secondary operation may be necessary. Under these circumstances, it is an error to wait and hope that this hemorrhage will cease.

3. As far as the late functional results are concerned, it is conservative to expect 80% of "well" patients and 98% well or improved.

4. Urinary frequency, persistent to a greater or lesser degree following prostatectomy, even though the cause of mechanical obstruction has been removed, is the chief reason why 18% of these patients consider themselves merely "improved" rather than well.

5. With respect to late functional results, the chief hazards of the perineal operation are those of injury to the external bladder sphincter and to the rectal wall. It seems conservative to consider that these hazards are more than compensated for by the lower mortality rate following the perineal operation.

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SACRAL ANESTHESIA—ITS FIELD OF APPLICATION

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There seems to be some confusion among members of the medical profession in regard to what is meant by sacral anaesthesia. Sacral anaesthesia is generally understood to be a combination of transacral and caudal injection. The purpose is definitely a nerve block to prevent the conduction of sensory impulses over the sacral nerves. Transacral injection is made about the anterior primary branches of sacral nerves through needles inserted into the first, second, third and fourth sacral foramina. The caudal injection is made into the caudal canal through the sacral hiatus. This combination of injection insures a bathing of the sacral nerves with anesthetic solution, and is what is commonly understood to be sacral block, or "sacral anaesthesia."

Pre-sacral block is the injection around the sacral nerves on the anterior surface of the sacrum. This procedure is seldom used, since transacral and caudal block is much easier carried out and more certain of results.

It should be mentioned that spinal anaesthesia should not be confused with sacral. In sacral anaesthesia the injection is made outside the dura, while in spinal, the solution is dissolved in the withdrawn spinal fluid and injected directly into the sub-arachnoid space. The latter, of course, carries with it a greater hazard than sacral anaesthesia. A marked fall in blood pressure is not an uncommon result of spinal anaesthesia. Long continued disorders of rectum and bladder and grave trophic disorders have been reported following spinal anaesthesia.

Technic of induction: The equipment required for sacral anaesthesia should consist of eight (8) needles of about twenty (20) gauge size, two (2) of fifty (50) mm. length, two (2) sixty (60) mm. and four (4) of eighty (80) mm. for the transacral block. These needles should obviously be sharp. For the caudal injection a spinal puncture needle of moderate calibre serves well. A ten (10) cc syringe of Luer type or any good syringe which will fit all above mentioned needles will work well. Some operators prefer special type of eccentric syringe upon which the needles lock, such as devised by Lundy of the Mayo Clinic. I, at present, use this type of syringe, and find it very servicable and easy of manipulation. One hundred (100) cc of warm novocain solution 1% strength, to which 6 gtts. of 1-1000 adrenalin is added, is necessary for complete sacral block. The addition of adrenalin may be superfluous; however, it may prevent the rapid absorption of the solution and thus prolong anaesthesia. Temperature of the solution is extremely important and should be 95-100 degree F. to get the best results.

The patient who has previously had one-sixth grain morphine sulphate hypodermically, is placed on the table in prone position, with small pillow under hips to elevate pelvis. Arms should be placed alongside of head, grasping corners of table without pillow under the head. Care should be taken to have patient squarely on table in comfortable and relaxed position. The field of injection is then prepared surgically with benzine, alcohol and mercurochrome, and draped with sterile towels. Iodine is objectionable as it may run down about the folds around the anus and cause the patient discomfort from burning. Standing on the patient's left, with the index finger of the left hand the operator palpates the tip of coccyx, sacral cornu and sacral notch. The sacral notch lies between the two sacral cornu and can usually be felt as distinct depression with tip of the finger. When the notch is found it lies over the sacral hiatus and the entrance to the caudal canal. The primary wheal over the notch is approximately 5 cm. from the tip of the coccyx. Considerable effort should be spent in making certain of anatomical landmarks, and placement of primary wheal, as upon this will depend the success of introducing needle into caudal canal. A fifty (50) mm needle is now attached to syringe and introduced through skin and subcutaneous tissues which are immobilized with first and second finger of left hand. When the needle strikes bone of coccyx, the syringe is turned through semi-circle, so that bevel side of needle is toward bone. The syringe is lowered so that the needle is in the same axis as that of caudal canal and advanced piercing the sacrococcogeal ligament. As the needle goes through the ligament there is definite sensation of puncturing a drum-like membrane and entering a hollow cavity. This assures the operator that he has entered the caudal canal. 5 cc of novocain solution is injected in order to make the introduction of the caudal needle painless. The syringe is detached and needle is left in situ. The caudel needle is taken in right hand between thumb and second finger with index finger, on the stilette holding it in place. Visualizing the location of the 50 mm needle, it is withdrawn. Not taking eyes off of field, the caudal needle is inserted, using same technique as for the introduction of 50 mm needle. After the needle has penetrated the skin and subcutaneous tissues, the index finger is used to depress tip and direct it into sacral hiatus. This manouver will be found of assistance in gaining entrance into the caudal canal. Assuming that the needle has entered the caudal canal, it is then advanced as far as second sacral foramen. If it encounters bone and cannot be advanced, it is well to give the needle a half turn after which it will advance to desired length. The stilette is removed, and note is made whether spinal fluid or blood flows from needle. If neither, the syringe is filled with few cc of solution and attached, aspirating to determine whether blood can be withdrawn. No blood noted. ½ cc is injected and aspiration again performed. Blood may appear in syringe: if so, it is probable that the needle has perforated the plexus of veins which line the caudal canal and should be slightly withdrawn or intravenous injection will result. Cares should be exercised throughout the whole operation that needles have not entered veins and intravenous injection made, as serious reactions are sure to follow.

The syringe is now filled and injection slowly made, injecting 20 cc of the warm solution. Certainty that the caudal needle has been properly placed may be judged.

1st—By ease with which the solution is injected into cavity.

2nd—Absence of tumefaction on posterior surface of sacrum, noted by pressure of left hand on this region.

3rd—Parathesia felt by patient in extremities.

The stilette is placed in the caudal needle, and preparation made for transacral injection.

The landmarks for the injection are the posterior superior spine and median line of the sacrum. Palpating the posterior superior spine lightly, a dermal wheal is placed a finger's breadth below and a finger's breadth from, the median line. This wheal should be located over the second sacral foramen. A finger's breadth below the second, the wheal over third is placed. The fourth is placed a finger's breadth below the third. In placing the wheals it should be remembered to allow for movement of skin in various directions in locating the foramen. Placing the wheal too far median would cause difficulty, the skin being attached at median line. A 60 mm. needle is thrust through second wheal and search for foramen made. On finding it the needle should be inserted about ½ finger's breadth. If not found after six or eight attempts, one should stop and attempt to find third foramen, etc. After finding one, it will facilitate finding the rest. After placing needles in second, third and fourth foramen, the first may be located by measuring a fingers-breadth above second and slightly lateral to a line drawn through second, third and fourth. Same precautions in injecting are noted as with caudal injection in the aspiration of blood. 15 cc of solution is injected into each first, 10 cc into each second, 4 cc into each third, and 3 cc into each fourth. The corresponding foramina on the right are injected in the same manner. The operator now goes back to caudal needle and injects 10 (ten) cc more. This makes approximately 100 cc of 1% novocain solution necessary to complete the anaesthesia.

Anaesthesia results in about five to ten minutes and first noted about anus and sacrum. This may be determined by relaxation of anal sphincter and pricking skin about anus with needle. After the operator is assured of anaesthesia, the needles are removed and patient prepared for operation. Anaesthesia will last from one and one-half to two hours.

Grodinsky of the University of Nebraska has done some very excellent experimental work on cadavers and fresh specimens, showing us to what extent solutions spread, when injected into the caudal canal. Also that novocain undoubtedly only affects the sacral nerves distal to the ganglia, this being the bare portion of the nerve. He further explains why we get anaesthesia of the fourth and fifth sacral more quickly and more profound than of the others, on the basis that in the fourth and fifth there is a greater length of bare nerve exposed to the solution.

Field of application: Sacral anaesthesia undoubtedly finds its greatest field of usefulness in urology and perhaps next, surgery of anus and rectum. It has served as one of the factors in reducing the mortality of prostatectomy from around 20%, down to a figure which is consistent with other types of operations. As there is no pulmonary irritation, there is no risk of pneumonia; the patient is not sick from the anesthesia and is able to be up and about a few days after operation. Since patients who require prostatectomy are usually of greater surgical risk than other operations, its value is obvious. In suprapubic prostatectomy it is necessary to infiltrate the abdominal wall in addition to complete sacral and caudal block, while in the perineal operation it is only necessary to do a complete sacral and caudal block. Sacral anaesthesia is successful for all types of operations upon the bladder, such as cystostomy, resection of diverticuli, removal of calculi, and cauterization of tumors of bladder wall. Here again, as the incision is suprapubic, abdominal block is combined with the sacral.

In cystoscopy sacral anaesthesia is of extreme value, as this procedure can be made absolutely painless. The patient being comfortable and free from pain, manipulation can be more complete and successful. After the block, the bladder relaxes and can be completely distended; this is of special value in cases where there is a marked cystitis. It should be mentioned that sacral anaesthesia does not affect sensation in the kidney region, consequently in doing pyelograms, the patient is able to tell the operator of the pain on distention of the pelvis in injecting the sodium iodide solution. Caudal injection alone will suffice in ordinary routine cystoscopy with ureteral catheterization. If the operator expects to do operative work on the bladder through the cystoscope, as fulguration, it is well to inject second and third sacral foramina to secure good anaesthesia.

In surgery of anus and rectum, sacral anaesthesia perhaps finds its most common application in hemorrhoidectomy. I find that it is ample to do a caudal block and injection of second and third sacral for this type of surgery. Relaxation of sphincter muscle is marked within 15 minutes after injection, and patient is left in same position as for the block. Fistulae, and fissure, can also be operated very successfully in this way. I have had occasion to use caudal block for alcohol injection in the treatment of pruritis ani. Here it is very useful, as local infiltration is objectionable on account of dilution of the alcohol. The injection of alcohol is painful and should not be attempted without anaesthesia. Ball's operation for the relief of pruritis can be very successfully done under this kind of anaesthesia. In radical operations upon anus and rectum for carcinoma, sacral anaesthesia must be complete; that is, injections must be made into the first, second, third and fourth foramina, in conjunction with the caudal block. Anaesthesia is successful even in rather high posterior resections. The position the patient must be in, also the absence of the "pumping" experienced in general anaesthesia, makes sacral anaesthesia very desirable in this type of surgery.

It must not be overlooked that sacral anaesthesia has some application in the field of gyneacology. Here it might suffice to mention its use in currettment of uterus, operations on cervix and repair of perineum. In vaginal hysterectomy it cannot be used, as the parietal peritoneum is not anaesthetized by sacral block.

In summarizing the use of sacral anaesthesia, it might be said to be applicable to surgery of the field supplied by the sacral plexus.

Accidents and untoward reactions: It can be said with considerable assurance that sacral anaesthesia is safe anaesthesia. Occasional reactions may result from intravenous injection, which will be followed by increase in pulse rate. If considerable amount of solution be injected, anginal pain and respiratory embarrassment will follow, which will require morphine for relief. However, the incidence of intravenous injection is in indirect proportion to care in technique of operator. If care is used that needles are not in veins before injection is made, there will be very little cause for concern.

Lundy, of the Mayo Clinic, reports two cases in which there was an area of necrosis over the sacrum following sacral block. One healed spontaneously; the other was extensive enough to require skin graft. Considering the great number of cases in which sacral block is used at the Mayo Clinic, this is negligable. He calls attention to the fact that in thin or elderly patients the skin over sacrum should be protected from pressure in the post-operative period.

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PERITONEAL ABSORPTION*

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Your committee has asked me to report on the experimental work on peritoneal absorption which I, together with my graduate students, have been carrying out during the past two or three years. In this brief resume it is impossible to present for your consideration the accumulated evidence which our experiments have furnished, so we must content ourselves with certain conclusions which have grown out of them. Our work was undertaken to determine the reaction of the peritoneum to solutions and suspensions of particulate matter, to find out how absorption occurred and the paths taken. We felt that these questions must be definitely answered before any satisfactory effort could be made to improve the more or less unsatisfactory therapy in acute peritonitis. We hope that some of the facts which our work emphasizes may determine new procedures more in accord with the physiological processes which an acute inflammation calls out.

Our experiments have been carried out on all of the laboratory animals and the results are so constant and similar that we present the reactions to dyes and bacteria as normal physiological reactions for the animal group rather than specific for any particular species. The clinical behavior of the patient with acute peritonitis is so exactly parallel to our experiments that we feel safe in using them to explain the obscure and uncontrolled questions of the average patient. It has been customary to make a sharp distinction between bacteria, particulate matter, and toxines, true solutions, in considering absorption but our results have shown that such distinctions are quite superfluous because particulate matter, as well as solutions, reach the blood stream by the same routes and in a very short time.

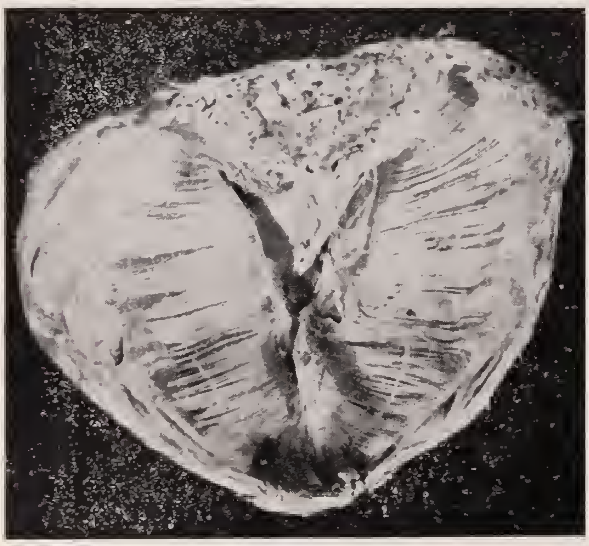

Figure 1. Photograph of the under surface of the diaphragm five minutes after injection of a 1% solution of India ink into the peritoneal cavity. The dark radiating lines show where the dye is being taken into the subserous lymph channels.

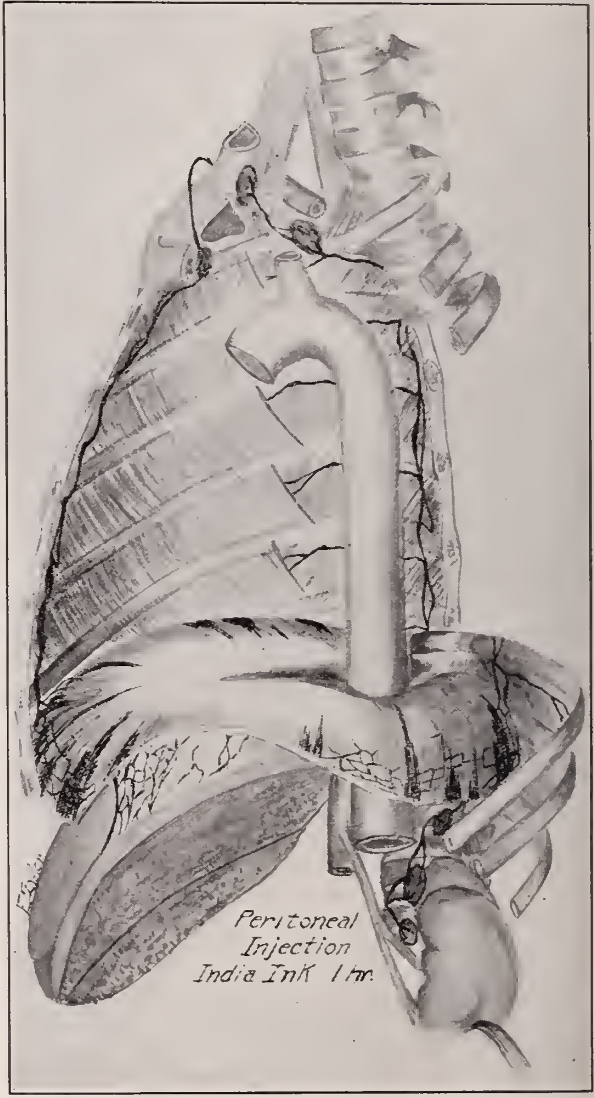

Figure 2. Drawing of lateral view of the chest to show the extent of lymphatic injection following peritoneal absorbtion.

When particulate matter, India ink may stand for the type because it is quite inert and easily followed, is injected into a normal peritoneal cavity it rapidly finds its way to the under surface of the diaphragm. Posturing the animal only slightly delays the process. As soon as the dye comes in contact with the peritoneum it finds its way through the peritoneal surface to enter the small lymph radicles in the subserous layer. These small channels are arranged in irregular radiating nets which tend to produce an etched pattern on the diaphragm shown in figure 1, covering all of the region occupied by muscle. These small channels join to form two main pathways on each side, one ventral and the other dorsal, which are known as the parasternal and paravertebral lymphatic channels. These channels extend upward and after passing through the superior mediastinal lymph nodes empty into the great veins in the root of the neck. The entire scheme of this system is illustrated in figure 2. We have always been impressed by the rapidity of the process; from three to five minutes is sufficient for the dye to reach the blood stream after interperitoneal injection.

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*Lecture given before annual meeting Nebraska State Medical Association, Omaha, May 16, 1929.

I wish to correct an erroneous impression that the thoracic duct acts as a channel to convey materials absorbed from the peritoneal cavity. While the superior mediastinal portions of the lymph channels on the left frequently join the thoracic duct before it enters the veins we have never found dye in the thoracic portion of the duct. It seems to me that the only important point to stress in these findings is that suspensions of particulate matter or solutions find their way rapidly to the blood stream through the parasternal and paravertebral lymphatics. It is interesting to observe that the superior mediastinal lymph nodes are always filled with bacteria after an acute peritonitis and yet these nodes almost never break down from such exposure. We have found the lymphatics, described above, the only ones filled by direct absorption from the peritoneal surface, those channels situated in the mesenteries and connected with the nodes about the origin of the superior mesenteric artery have their beginnings in the walls of the intestines and other viscera and in order to fill them it is necessary to deposit the dye with a needle in the wall. It is conceivable that absorption might occur through these channels in cases of ulcerative processes but none of our experiments with induced peritonitis have succeeded in filling them.

The lymphatics are not the only paths of peritoneal absorption but both particulate matter and solutions are taken up by the omenta and passed directly to the portal circulation. Figure 3 is a photograph taken one hour after an interperitoneal injection of India ink. It shows the omenta filled with the dye and, what is possibly equally important, it shows that other peritoneal surfaces do not absorb to any appreciable extent.

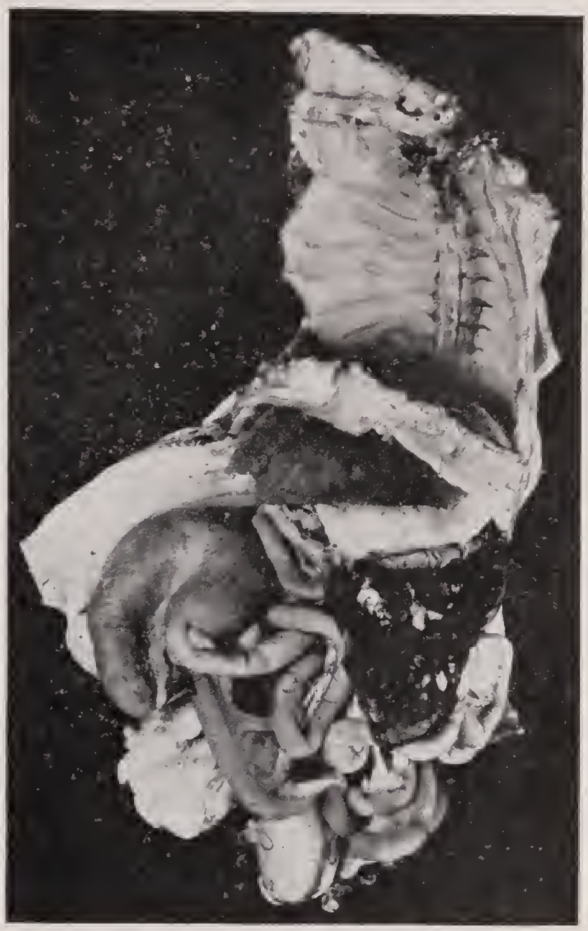

Figure 3. Photograph of abdomen and thorax one hour after interperitoneal injection of India ink to show particularly the deep dying of the omenta through which the dye is taken directly into the Portal circulation.

Of course the destination of all material taken up by this route is the liver as our experiments have repeatedly proven.

To the person who has to do with acute peritonitis it is somewhat more convincing to use bacteria instead of dyes although the behavior is exactly the same. A number of experiments with *B. typhi murium* showed that the absorption of bacteria is by the two routes described above and is equally rapid. Within eight minutes from the interperitoneal injection of broth cultures bacteria can be grown from the blood of the tail.

There has always been a question as to the absorption from the acutely inflamed peritoneum; in order to answer this we repeatedly induced peritonitis and, at various intervals in the process, examined its reaction to absorption. We found that the paths were the same and the absorption rate did not materially differ from the rate for the normal membrane. Absorption is slightly freer in early severe infection and is definitely less in old fibrinous processes: it is possible that the interference with circulation of fluids within the cavity in the latter case is responsible for the difference. As to the fate of the bacteria in these experiments: after two or three days they disappear from the blood stream and a very little later the peritoneal contents is also sterile even when the gross appearance is still one of acute peritonitis.

We have carried this work over to clinical cases, carefully checking cases of acute peritonitis in the University Hospital both for blood cultures and peritoneal cultures, and find they agree with our experimental procedures. We may conclude that absorption has contaminated the general circulation long before any operative procedure can be instituted and that the process can be little if at all influenced by so called surgical drainage.

THE TREATMENT OF EMPYEMA*

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A Review of 14 Cases from the Surgical Department of the Lincoln General Hospital With Remarks on the Closed Drainage Method.

More progress has been made in the surgery of the chest during the last two decades than of any other region in the body. Although the greatest advance has been made in the treatment of chronic disease of the lung by collapsing procedures, extirpation of lung substance and bronchoscopy, some further understanding of the principles involved in the treatment of acute empyema has led to modification of the management of this common and important condition.

I have prepared an analysis of fourteen cases from the Lincoln General hospital, and while no definite conclusions can be drawn from so small a series, some interesting features of the disease can be pointed out, and since these patients were under the care of eleven different surgeons and as many medical consultants, the tendencies toward the different methods of treatment in this community can be observed. While particular emphasis will be laid on treatment there are certain other features which could not escape my attention and which I shall comment upon briefly.

Eight of the patients were children from two to six and six were adults; in a large series it would be well to group them separately. Eight were males and six females. In eleven out of the fourteen cases the empyema occurred on the right side. Only one of the cases terminated fatally, and this was a man in whom the disease was associated with a caries of the dorsal spine with flaccid paralysis, the empyema apparently occurring secondarily.

All but three of the cases followed an acute respiratory infection, in most cases defined as pneumonia. Of these three, one was traumatic in origin, one followed pneumothorax, and one caries of the spine.

Bacteriology: Bacteriological report was available in seven of these cases, but in these the organisms were not all completely identified. Two were due to the pneumococcus, one showed no bacteria in the smear but was not cultured, one showed no growth on culture. One cultured streptocuccus, and two a diplobacillus unidentified.

The pre-operative temperatures were surprisingly low, in all uncomplicated cases 100 to 102.5. The white cell count was not constant; in seven out of twelve cases from 18,000 to 24,000, in two cases near 8,000, and in the other three 12,000 to 14,000.

Physical findings were classical in every case, and aspiration was successful in every one of twelve cases in which there is record of its attempt.

X-ray: There was an abnormal shadow of the lung in all of nine cases in which this information was available. In two cases fluroscopic examination revealed the presence of fluid. In four cases the only pre-operative examination led to a definite diagnosis of fluid, in two cases the shadow was not interpreted as fluid, and in one case fluid was demonstrable by x-ray six days after the first examination in which the shadow had not been interpreted as fluid.

Complications: In five of the cases the empyema was complicated by some other condition before operation was instituted. One had an accompanying sub-diaphragmatic abscess, one an abscess of the dorsal spine, one was recently operated upon for appendicitis, one had pneumothorax, and one a mastoid infection.

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*Read before the Lancaster County Medical Society, Nov. 20, 1929.

TABLE NO. I

	No. Cases	371 cases*	446 cases**
Age—Children 2-6 Yrs.	8	371	
Adults	6	0	
Sex—Male	8	146	
Female	6	121	
Side—Right	11	105	
Left	3	155	
Bilateral		7	
Mortality—Deaths	1-7%	19%	29%
Etiology—Acute respiratory infection	11	92%	
Trauma	1		
Pneumothorax	1		
Caries of Spine	1		
Bacteriology—Seven cases			
Pneumococcus	2	73	252
No bacteria	2	20	
Streptococcus	1	23	19
Diplobacillus (not identified)	2		
Staphylococcus		6	39
White cell count—Twelve cases			
8,000	2		
12,000 to 14,000	3	Average	
18,000 to 24,000	7	34,000	
X-ray—Ninc cases			
Positive fluid	6		
Negative fluid	2		
Negative then positive	1		
Complications—			
Pre-operative	5		
Subdiaphragmatic abscess	1		
Abscess of dorsal spine	1		
Appendectomy	1		
Pneumothorax	1		
Mastoiditis	1		

*Farr and Levine, Empyema in Children, Surg. Gyn. & Obs. XLVI:79, Jan., 1928.

**Downes, Treatment of Empyema in Children, Med. J. of Australia, 2:105, July 23, 1927.

TABLE NO. II

	Open Method	Closed Method
Operation	8	6
Mortality	1	0
Morbidity		
Hospital time extremes	2-34 days	13-39 days
Hospital time average	13	23
Complications		
Encapsulated empyema (secondary op.)	1	0
Subcutaneous abscess	0	1
Convalescence (Omitting fatal and two day case)		
Practically afebrile	4	4
Febrile	2	2
Results—Good or improved at discharge	7	7
Efficiency of Closed Method (five cases with post-op. x-rays)		
Closed		4
Pneumothorax		1

Very little comment is necessary on these findings. The diagnosis in all these cases was strongly suggested by the history and physical examination and could be confirmed by thoracentesis. The x-ray proved misleading in three out of nine cases.

Treatment. The treatment was operative in every case; none was treated by simple aspiration. The open type of operation was done in eight cases, rib resection in seven and intercostal drainage in one. Closed drainage was attempted in the other six cases. I wish to compare the results of these two types of operation.

Mortality. In the only fatal case rib resection was done. This is of no significance since a fatal outcome was to be expected here.

Morbidity. The time in the hospital after operation is the only index to the morbidity, since no record could be obtained concerning the progress afterward. All cases were draining at the time of discharge. The open drainage cases were in the hospital from two to thirty-four days after operation, averaging thirteen days. The closed drainage cases from thirteen to thirty-nine days, averaging twenty-three days.

Complications. Complications arose after operation in two cases. One of the open drainage cases developed an abscess in the pleura away from the site of drainage, requiring secondary operation. One of the closed drainage cases developed a subcutaneous abscess away from the site of the drainage which required incision.

Efficiency of Closed Method. Five of the closed drainage cases had x-ray examination after operation, all but one of these cases showing expansion of the lung without pneumothorax. In one case the closed drainage failed, the lung collapsing and pneumothorax appearing.

Convalescence. Of six open and closed drainage cases with recovery, the convalescence in four of each was practically afebrile and in two cases of each was stormy with fever continuing for many days. In the two closed drainage cases the fever continued a little longer than in the two open drainage cases.

Results. At the time of discharge from the hospital all recovered cases were labeled "improved" or "good." I have no record of the eventual result in many of the cases.

Comment. I am glad to see the use of the closed drainage method by many surgeons of this community. I believe it is more widely used than the open drainage method. The procedure of choice still remains controversial, but there are certain features of the closed method which make it seem the more rational, as a primary procedure. The results of the cases I have reviewed are excellent and give no evidence of the superiority of either method.

The theoretical advantage of the closed drainage method are: (1) It is a conservative operation and can be performed more quickly and with less shock than rib resection. (Intercostal incision is probably no more shocking than trochar thoracotomy).

(2) By preserving the expansion of the lung it produces less fall in the vital capacity than the open method. This is important when the opposite side is affected by a pneumonia or empyema.

(3) By preserving or producing expansion of the lung and apposition of the pleural surfaces there is less danger of a chronic empyema.

The disadvantages of the method are: (1) Drainage may be inadequate or difficult. A large catheter with wide denestra will aid in overcoming this disadvantage.

(2) The apposition of pleural surfaces may lead to a pocketing of pus elsewhere in the pleural cavity. It occurred in this series in one case in which the operation performed was rib resection. Pleural adhesions existing prior to operation probably lead to this condition more often than those forming after operation.

Contraindications: Attempted closed drainage is contraindicated:

(1) When there is an encapsulated empyema of long standing which is surrounded by thick rigid walls.

(2) When the fluid contains a great amount of thick fibrin or blood clot which could not be expected to pass through the tube.

Management: I believe that in cases of empyema where hospital facilities are available, and where these contraindications do not exist, closed drainage should be the primary procedure. The fluid should be aspirited slowly and aspiration discontinued when the patient becomes uncomfortable or coughing begins, to be resumed in two or three hours. Within twenty-four hours the pleural cavity is empty, and can be kept empty by periodic aspiration, the use of a rubber finger-cot as a valve, or by continuing the drainage line down the side of the bed and placing it under water. Lilienthal says that one-third of the cases become convalescent with this procedure alone.

If the tube becomes stopped or the temperature continues after seventy-two hours, irrigation with saline or Dakin's solution may be instituted. In case excapsulated empyema occurs, another operation may be performed at that site.

At the end of a week or ten days the tube usually either falls out or the sinus becomes so large that the tube does not fit tightly. If collapse of the lung has not occurred before this time there is very little danger of its occurrence probably because of pleural adhesions around the sinus, and the tube may be replaced, cut off or be replaced by other rubber drainage.

If a leak has occurred during the first few days and the lung becomes collapsed, open drainage follows. If then the sinus can be kept open enough by a tube to provide adequate drainage, aspiration and irrigation may be continued, or a larger opening can be provided by partial resection of one or more ribs.

There should be no hesitancy about following a primary trochar thoracotomy by a secondary operation of either closed or open type, should the need arise. The patient has almost invariably benefitted by the primary drainage even though inadequate and is a better risk than at the primary operation.

THE OMAHA PUBLIC SCHOOL LUNCH AND MILK FUND

MRS. MILLARD LANGFELD,
Omaha, Nebr.

As physicians, you are all familiar with many of the facts stated in this paper. I feel, however, that their reiteration will emphasize more strongly the need of the activities carried on in Omaha under the name of the Public School Lunch and Milk Fund.

Food is man's chief enemy or friend. Sunshine, pure air, proper diet form the triumvirate of his well-being. If men are "but children of a larger growth," and if the period of growth and development is childhood, and growth and development are directly traceable to correct diet, then the study of the food of children is a most important one. The subject of their nutrition is well worth consideration, and should be a matter of civic interest, for it yields sound economic returns. Adults have to eat to maintain proper weight and normal health, whereas children have to eat, not only for health, "but to supply sufficient power and energy to increase their weight from fifteen to twenty-five times their weight at birth." Tubercular children are, as a rule, undernourished children; rickets, scurvy, xerophthalmia—a severe eye infection, often leading to blindness, and a dread army of diseases found in far too great a percentage among school children, is very largely due either to an insufficiency of food or to malnutrition.

An improper diet causes, according to the best medical testimony, not only physical ills and mental inertia, together with an unstable nervous system, but also a lessened resistance to disease infection, and a consequent weakened vitality after disease, leading either to chronic invalidism, or to a shortening of life. Diet, it is acceded, is the very biggest factor in the life of an individual. It has been aptly phrased that as the individual is the unit of the race, the maintenance of the health of the individual unquestionably insures the maintenance of the health of the race. These statements may be trite, but they are accurate.

For the last thirty years more has been learned about scientific nutrition than in hundreds of years preceding them, for within that period nutritional laboratories have been established in which tests, as to the properties of various foods are made upon animals, and their effects noted. Those familiar with this work know that the difference in animal activity, disposition, growth, health and longevity, as influenced by the character of their diet, is almost incomprehensible. Tests have proven that in large measure the same causes produce the tardy or punctual child, the child who cries in the class room, or the happy one, the backward or the alert child, as produce the healthy or unhealthy chick, the brooding or frisky white mouse, the diseased guinea pig or its well developed, healthy twin. The slogan, "clean milk made the difference" is endorsed by experiment.

Many cities, recognizing the seriousness of the problem of the under or malnourished child, and knowing that nowhere could he be reached so effectively, or in so large numbers, as through the school house, feel that they have gone a long way towards its solution by the distributing of milk, and the establishing of school lunches in the grade schools.

A noted jurist, commenting on this, said that as essential as the public school system, are the school lunches. He said this because he realizes that malnutrition is frequently the cause of failure and degeneracy, and that children who have been wrongly nurtured find it hard to adjust themselves to the rights and demands of society—a condition that produces much economic distress. Proper attention paid to the diet of children would save many a later hospital and prison bill. Hunger and fatigue unquestionably lead to disease and desperation, and desperation leads to crime.

Stimulated by the efforts of the U. S. government in trying, through its publications to get this message across. Interested in statistics compiled by a committee on school inspection that showed that out of 18,000,000 pupils in the public schools 3,000,000 were repeating a grade a second, third, fourth or even fifth time, at a cost of approximately $100,000,000 per annum, an expense declared to be largely wasteful, preventable, and due in great measure to undernourishment. Impressed by the fact that the weighing of the children should be accompanied, to be complete in its results, by the availability of milk where needed, or wished for, we investigated conditions in Omaha. Owing to their daily contacts with children, we asked some of the teachers to aid us in this research with the following results: From their statistics we discovered that in a first grade of 36 children, six, before coming to school had had a warm cereal or toast or milk; many coffee or water instead of milk, and in an alarming percentage, simply bread and water.

In a third grade of 46, a large number had had coffee and beans, heavy meat and coffee, water and pie, chocolate cake and water, and in other grades we found 18 who were coming absolutely breakfastless to school.

Not long ago a boy fainted in school. His teacher discovered that it had been some time since he had had food—no breakfast at all, and no adequate meals for days.

In the fourth grade a truant was questioned by his teacher, only to find that his truancy had been on account of a quest for food. The investigation further revealed that in many cases where the food supply was sufficient, it was atrociously unbalanced.

In some instances, the parents, or a widowed or deserted mother, left home early in the morning to hold down a job, and the children had to shift for themselves. At noon some of them returned to a cheerless, lonesome room and a piece of bread and cold coffee, others with a nickel went to a nearby store and bought cheap candy, or to a restaurant and bought a piece of pie. Through investigation we learned that to many a child milk at home is practically unknown; through experience we have learned the psychic value of many children drinking milk together, instead of the one lonely child drinking it at the one lonely breakfast table—it simply doesn't drink.

On data furnished by this investigation, and with the co-operation of the board of education and the active support of some who are always ready to aid in a constructive piece of work, was started the Public School Lunch and Milk Fund, a fund sustained at present by voluntary subscriptions from individuals and clubs, who contribute monthly or yearly.

Thoroughly cosmopolitan, it owes its support neither to any one individual nor organization.

Among her many duties the school nurse weighs the pupils, determining the percentage of those under weight. The Public School Lunch and Milk Fund stands ready to supply the milk or food whereby the weight is brought up to normal, and the child's disease resistance is fortified. The Public School Lunch and Milk Fund supplies for cost (or gratuitously when necessary) milk and graham crackers, once or twice daily, as requested by the principal of a school. Besides this daily distribution of milk in all of the schools in which we work, in two of our schools a hot lunch was served twice weekly, and in one of the schools where it was requested, a daily lunch was served. At several schools we served breakfasts, (hot porridge, the best milk and sugar), to take care of such children, who, unhappily, perforce of circumstance, come breakfastless to school. In one school there were 18, and in another 40, of such children. During our first year (Sept. 1927-June, 1928) we worked in two schools. At the close of this, our second year (Sept. 1928-June 1929) we worked in eleven, and from this beginning it is our ambition to multiply this nutrition work until all of the schools needing or desiring it are included.

Much attention is paid to the way the food is served, for we believe that what is pleasing to the eye is stimulating to the mind, and that a happy frame of mind conduces to good digestion. We aim to have the lunch room a bright, sunny place, attractive with pictures and plants, with luncheon cloth and flowers, and on the blackboards are bright colored pictures of vegetables, fruits and bottles of tempting milk, sometimes cut out and mounted by the girls of the art classes. In each of our simple, wholesome lunches, proper food values and combinations are carefully studied, and food suitable to the season is stressed. Cooling fruit gelatines, when it is warm, a hot dish when the cooler days are on.

Sample lunches:

Warm ginger bread, cottage cheese, milk.

Baked apple with raisin center, buttered nut sandwich, milk.

Baked potato, buttered whole-wheat bread sandwich with lettuce leaf, milk.

Fruit gelatine, buttered raisin bread, milk.

And now I am asked to touch upon the high spots of our nutrition work. There are two kinds of accomplishments, (a) the tangible kind revealed by statistics, and (b) the more subtle, intangible kind, that have not only an economic but a psychic and social value as well. I believe our achievements lie in both directions: (a) Last year were served in one month 1060 individual lunches; 240 breakfasts; 1514 quart bottles of milk; 6056 half-pint bottles, were distributed.

This year were served in one month 1860 individual lunches; 840 individual breakfasts; 2260 quart bottles of milk, 9040 half-pints were distributed. The greatest quantity of milk was distributed during a long cold spell, during which 790 different children were reached daily in the eleven schools in which we worked. As many as 12,494 half-pint bottles were then distributed in one month. At this time the price of milk was raised for the ordinary consumer, one-fourth cent for a half-pint bottle, and would have been prohibitive for many children had it not been for the Public School Lunch and Milk Fund.

Some of the nurses' charts show the following results: (These are the statistics from three schools, where breakfasts, lunches and daily milk were given)—32 children, 10 per cent or more under weight. After one semester this number was decreased to 22. Of these 22 remaining, all gained. Some of the very remarkable gains were: two children who in one semester gained 5 lbs.; five children who in one semester gained 6 lbs.; one child who in one semester gained 7 lbs.; one child who in one semester gained 10 lbs.; 1 child who in one semster gained 15 lbs.

At another school where 79 children were served daily milk and graham crackers from Feb. 1st to March 31st the results were: Fourteen children from 10 per cent to 25 per cent under weight were brought up to normal; 34 children from 10 per cent to 25 per cent under weight were brought up to very near normal. Of this group 56 were reported as drinking more milk at home than they had previously done, while some who would not drink it at home were relishing it at school. In the case of 50 children, teachers reported improvement in school work and general demeanor, which they felt was attributable to the drinking of milk.

From another school came the following statistics from a group of daily milk-drinking children. Milk drinking started in October.

Weights in September	Weights in January
46¾ lbs.	50.5 lbs.
40 lbs.	45. lbs.
41¾ lbs.	49.5 lbs.
37½ lbs.	39.5 lbs.
38¼ lbs.	41 lbs.
51 lbs.	56 lbs.
40 lbs.	44.5 lbs.
37¾ lbs.	41 lbs.

Teachers reported all improved in work and in demeanor.

(b) As to the more subtle influences, space forbids but a mere mention of a few instances: One from a child, two from teachers. About two weeks after having discontinued the lunches at one of the schools, (the lunches being over for the season), the principal handed me a sealed note from a youngster in the second grade. Together we opened it. It read:

"My dear Mrs. L: I love you, because you are a good cook, and the other ladies, too. Devotedly—Y."

A teacher in one of our schools wrote: "To see a wholesome pink creep into cheeks, to see children develop right habits, sound teeth, sturdy bodies, and healthy minds, may seem to some to belong to a day nursery, or to a food clinic, but I would like to take this opportunity to congratulate all intrested in this project, who believe that such work belongs to all groups who are interested in helping to build strong, dependable, American citizens, who in turn can successfully carry on in years to come, this business of our United States of America."

And from yet another school, a principal states: "Our children are very happy in having the milk luncheons, and are grateful to the guiding spirit."

Each individual and organization interested is certainly an integral part of this "guiding spirit," without whom we could not carry on.

The activities conducted under the Public School Lunch and Milk Fund, are vital. Its possibilities are unlimited.

DIFFICULTIES IN DIAGNOSIS OF INSULIN COMA

Ernst Wiechmann, Cologne (*Journal A. M. A.*, May 4, 1929), made a series of examinations with the object of ascertaining the degree of intra-ocular tension in cases of diabetic coma and hypoglycemia after insulin injection. Of eight cases of diabetic coma, he found great reduction of the intra-ocular tension in six, while in two cases the tension was normal. These observations show that reduced intro-ocular tension may be present in cases of coma other than diabetic coma. Also in cases of hypoglycemia after insulin injection, he found reduced intra-ocular tension. In eight cases it was at the lowest boundary of the normal, and only in two cases below this boundary. This fall in intra-ocular tension in hypoglycemia is not at all to be explained by alteration in the blood pressure. This has been proved by curves of blood pressure and of intra-ocular tension taken simultaneously. One explanation for the reduction of intra-ocular tension in hypoglycemia is to be found in displacements of the body fluids. After injection of toxic doses of insulin, there is a considerable rise in the amount of hemoglobin, which falls again after ingestion of food. In contradistinction to this, in hypoglycemia there is a fall in intra-ocular tension, which quickly rises after ingestion of food. It can be assumed from this that these changes are related to the sweating which is typical of hypoglycemia. The fall in tension would then be the expression of the streaming of intra-ocular fluid and of tissue fluids in general into the blood stream. That there is no consequent reduction in the hemoglobin percentage can be explained by the theory that the addition of fluid to the blood from the body tissues is counteracted by the great and speedy loss due to the sweating. In all the cases of hypoglycemia which he observed, the temperature fell below 36 C. (96.5 F.). He feels that according to this a fall in temperature is not absolutely pathognomonic of hypoglycemic coma. But according to his observations in general, it happens so often as to deserve a certain amount of consideration in the differential diagnosis between diabetic and hypoglycemic coma.

SOLUTION OF PITUITARY AND RUPTURED UTERUS

A. M. Mendenhall, Indianapolis (*Journal A. M. A.*, April 20, 1929), asserts that solution of pituitary is a valuable drug for post-partum hemorrhage. It is probably safe in the third stage of labor. It is probably safe in the induction of labor if used cautiously and in properly chosen cases. It is never safe in the first stage of labor. It is rarely if ever safe in the second stage of labor. Its chief value is to the accoucher instead of to the mother or the baby. Other obstetric procedures are nearly always safer. There can be no rule as to the treatment of ruptured uterus, but the attendant must remember that conservatism may save many patients when more radical procedures may prove fatal.

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DELEGATE, COUNCIL ON MEDICAL EDUCATION, A. M. A.

Dr. J. S. Welch, Lincoln	1929

MEDICO-LEGAL DEFENSE COMMITTEE

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Note: In case of suit notify secretary at once.

PARTNERSHIP GENERAL PRACTICE

This article is concerned with a restricted group of two or more physicians serving a community in general practice and is not to be confounded with the group or clinic as generally understood. It must be apparent to all that a partnership of two or more kindred spirits in the practice of medicine, at least in the smaller communities, must be an ideal way to practice medicine and infinitely better for the physicians concerned than to practice as rivals in the community. The older practice of medicine has always been looked upon as largely a personal matter in which confidence in the physician was the most important. In these days of scientific medicine, this personal equation, while still a matter to be reckoned with, is not any more considered all-important.

Service to the community is the all-important matter. This can best be rendered by a system that will produce the best results with the least delay and inconvenience, and with a minimum of effort. Let us assume a two-physician community in which the tributary trade territory is a ten-mile radius. Practicing separately each physician may have a patient in the same certain neighborhood, ten miles out, requiring daily attention, requiring the efforts and time of both to attend, whereas, if the two physicians are united in their efforts, one can make the several calls with little more time and effort than is required to attend to one patient. In the meantime the other partner can minister to patients in another neighborhood or attend to calls in town or office. Everybody concerned is benefitted, a prompter service results, with less expenditure of effort, and more people can be served.

Daily consultations in the office in the absence of the patients are possible and profitable to physicians and patients alike. In emergencies requiring an assistant or an anesthetist, calling the other partner is most convenient and agreeable.

People knowing that two competent physicians work as a unit will be drawn to them in greater numbers when medical service is sought, thus increasing the income. Two men working together can successfully conduct, if they will, an emergency hospital suited to the needs of the community. They can the more fully equip themselves with x-ray and other laboratory apparatus and become more proficient in using it. In such a partnership each one should be able to qualify in some special line of work in addition to the usual routine and in this way they increase their usefulness to the community and incidentally increase the income. It is likely that two or more men practicing together have less annoyance from bad accounts than would either practicing singly.

The opportunities for rest, recreation, postgraduate study, attendance on medical society meetings, alternately, if need be, is easy as compared to the man who practices by himself.

The country doctor is not passing; but he must adapt himself to more up-to-date methods of procedure to attain the best results professionally, socially, financially and in the hearts of the community, and the outline above indicated offers a solution of the problem. The country doctor must not much longer stand in the light of his own possible progress.

THE WORK OF THE HOUSE OF DELEGATES

The average reader will agree that the work accomplished by the House of Delegates of the A. M. A., at the Portland session is for the most part uninteresting to the profession. The House of Delegates is composed of a body is distinguished physicians who legislate for the organized profession and is to be compared to the Congress of the United States—with relatively as much politics involved.

The minutes of the House at hand indicate the powers that be expect in the near future to begin the erection of a monumental headquarters building in Chicago to replace the stately structure in which the activities of the organized profession are now housed. *The Journal of the American Medical Association* has for years been a profitable venture and has piled up a surplus of considerable magnitude over which we all rejoice. Some had even hoped that the price of the Journal might be reduced to the reader; but no, the House gave authority to the Board of Trustees to increase the subscription price at their discretion to an amount not to exceed $8.00 per year. We can only guess that this is to boost the building fund.

Authority was given to the Judicial Council "to present to the House of Delegates at the annual meeting in 1930 a comprehensive statement for the guidance of the American Medical Association concerning the practice of medicine by corporations, by clinics, by philanthropic organizations, by industrial organizations, by demonstrations and by similar organizations, and concerning the relationship of physicians thereto."

"A committee to study and report on the menaces to health and to life from carbon monoxide gas as a constituent of illuminating gas and as a by-product of the combustion of gasoline in automobiles; on the dangers of gases used in electrical refrigeration, and on steps necessary to be taken for the protection of the public" was authorized.

Partly, at least, as a result of the survey made by our own Dr. Palmer Findley, Omaha, and presented before the American Association of Gynecology and Obstetrics, at Toronto, two years ago, the Council on Medical Education was instructed "to investigate the present teaching of obstetrics in this country and make such recommendations for increasing the clinical teaching hours of obstetrics as the results of its investigations may warrant."

It was ordered "that inasmuch as some hospitals, municipal and otherwise, have advertised in the daily press and have given to the public stories of their special excellence and efficiency as compared with other hospitals, such advertisements be collected by the Council on Medical Education and Hospitals and that the question of hospital advertising be given due consideration and reported to the House of Delegates at the next annual meeting and the rating of hospitals be affected according to the unethical advertising published."

A resolution was presented "providing that the Board of Trustees be directed to defray expenditures of delegates for transportation, housing and maintenance during attendance on each annual session.'' On an adverse report from the Board of Trustees to which it was referred the resolution was voted down. It is not so many years since all delegates had to pay their own transportation and were glad to do so for the honor and the good of the cause.

The House of Delegates disapproved any change in policy by the American Red Cross whereby the nurses of that organization would be available for service to patients under the care of cultists, and ordered that the Secretary of the Association communicate with the proper officials of the American Red Cross and advise that organization of the attitude of the House of Delegates. We must remember that it is a condition and not a theory that confronts us and the Red Cross as well.

Medical Schools were encouraged to inaugurate suitable methods to provide vacation periods of practical experience to be derived by association with active practitioners for their Senior students.

The House of Delegates approved the principle of securing in the case of all capital charges and in the case of as many other criminal charges as the psychiatric facilities of the state will permit an impartial and routine mental examination of the defendant in advance of the trial as a means of obviating the contentious introduction of partisan testimony, and that it approves further the principle of removing as far as possible the question of sanity from the trial itself, reserving the employment of psychiatric data for a post-trial inquiry to determine what treatment is appropriate to the convicted person.

STATE FAIR AND STATE HEALTH WORK

As you know the state health work and exhibits at the State Fair are now under the supervision of the Nebraska State Medical Association. We have been putting in some extra work on the proposition this year, and are really desirous that the doctors of the state visit that department.

We have the examinations for adults, the four H club, the babies, and some exhibitions, lectures, and reels on contagious diseases, particularly diphtheria prevention. In the babies department we are planning for some reels and slides in addition to the examinations of the babies, and possibly some lectures. We have really put a good deal of work on the proposition this year and are desirous of constructive criticism.

H. B. Hamilton, Omaha.

THE NEW PLAN OF THE COMPENSATION COMMISSION.

A plan has been formulated by Hon. Ernest M. Pollard, Compensation Commissioner, which it is expected will go a long way toward solving the present perplexing problem of medical treatment and expenses in workmen's compensation cases. (See page 374).

The Legislative and Public Policy committees of our state organization were conferred with frequently and have given their unqualified endorsement to the plan.

I am mindful of the fact that abuses of the provisions of our compensation law, insofar as it pertains to medical treatment, have occurred in the past; and each such instance casts a stigma upon the profession as a whole.

At every session of our legislature an effort is made to amend the present law, by placing a limit of $100 or $200 upon the medical expense in compensation cases. We of the profession, as well as the public at large, do not want such a restriction again in our law. However, its ultimate passage, with perhaps other obnoxious regulations, is inevitable, unless we do our full share to remove the cause of the present criticism.

I am confident that the Compensation Commissioner will insist that the members of the profession shall receive a "square deal." If we are to merit this treatment at his hands, it is imperative that we voluntarily and whole-heartedly cooperate with him.

Every doctor in Nebraska should see to it that he complies with the provisions of the rule announced and with all of the conditions imposed upon him by the plan.

—K. S. J. Hohlen,
Chairman Campaign Committee,
Lincoln.

NEARING AGREEMENT ON THE TREATMENT OF FRACTURES OF THE FEMORAL NECK

At the joint meeting of the American and British Orthopedic Associations held in London this summer, Royal Whitman continued his advocacy of his abduction treatment of fractures of the neck of the femur in a very convincing and conclusive paper on this subject which he has pursued persistently for about one-fourth of a century. His presentation was most heartily received as evidenced by prolonged applause by all, especially the British who are considered to be usually reticent.

There was a very full discussion and all seemed in accord that Whitman's method was the one of choice in the vast majority of cases. It was agreed however that the principles of technic of its author should be closely followed. Simple abduction with an indifferent cast as too frequently seen, is not adequate. Cases, unreduced after several weeks should be operated by suitable bone graft technic; and non-union with atrophy and absorption of the neck, are entitled to have the Whitman reconstruction or other similar efficient method of operative treatment in properly selected cases.

There developed in the discussion a distinct favor to nailing or bone pegging in the better risk cases under seventy. In this phase of the discussion, there was presented a preliminary report of Smith Pedersen on the results of fixation by a special nail with four lateral fin-like blades, each about 3-16 of an inch in width, giving the instrument a lateral width about one-third of an inch at its widest part and three-eights of an inch at its point. There is no nail-like core or shaft. The four blades are thin and project at right angles from the center and will readily cut their way through cancellous bone and be so tightly and thoroughly imbedded that a maximum of stability is secured. This author's seven cases represented satisfactory results. An exhibited speciman from a patient who had died after two months from an intercurrent disease, showed union well advanced and firm with a perfect result for the period.

These summarized and crystalized opinions conform with the opinions long held and advocated by the author of this report.

J. P. Lord, Omaha.

EDITORIAL PARAGRAPHS

If it is true that the country doctor is passing, it will be a sorry day when he has passed.

The Inter-State Postgraduate Medical Assembly of North America meeting will occur at Detroit, October 21-25, with the usual international array of talent.

Arrangements have been made whereby the Omaha-Douglas County Medical society broadcasts educational talks every Saturday evening from 6 to 6:15. Good work.

The law providing for sterilization of defectives in Nebraska is now in effect. A board consisting of the heads of a number of state institutions has been appointed to carry the law into effect.

Dr. J. J. Keegan, has resigned the deanship of the University of Nebraska College of Medicine to devote his entire time to his specialty, neurological surgery, and Dr. C. M. W. Poynter, has been appointed acting dean.

A lip reading course will be given at the University of Nebraska this fall under Miss Emma B. Kessler's supervision. The class will start September 30. The course will contain thirty lessons costing twenty-five dollars.

The American Association for the Study of Goiter is offering a prize of $300 and a medal of honor to the author of the best essay based on original research work on any phase of goiter, presented at the annual meeting at Seattle, September, 1930.

Midsummer heat is not conducive to connected thought and affects the writer as much as it does the reader. It is not thought that apologies are needed, for the liklihood is that the *Journal* gets but the most cursory glance during the present season of hot weather.

Two Nebraska surgeons have recently published books. Dr. H. Winnett Orr, Lincoln, has published "Osteomyelitis and Compound Fractures," and Dr. D. T. Quigley, Omaha, "The Conquest of Cancer by Radium." Further notice later.

Blood tests to determine paternity are still in the unproven stage. We are not far enough advanced to allow science to say the last word on the matter, although it is said that a Hamburg court recently granted a divorce on the scientific proof that the blood of the reputed father and the child belonged to separate groups.

An honored correspondent sent us the following: "If your journal continues to publish editorials which are so to the point as those which have been reproduced from time to time in the *Federation Bulletin* it will continue to wield an increasing importance to the medical profession and assume an excellent position among medical journals. Sincere congratulations on the manner in which the Journal is being edited."

The Missouri Valley Medical Association, in part a Nebraska institution, should interest every physician of this state. In cooperation with the Extension Division of the State University this association meets at Iowa City September 26th, 27th and 28th. Representatives of the various universities of this section will participate in the program, and every effort is being made to make this a very profitable period of graduate instruction. The medical profession is cordially invited. A detailed program will be sent later to each physician of the state.

An interesting report of the McCormick hospital at Chiengmai, Siam, has reached us. Dr. James W. McKean, a member of the Omaha-Douglas County Medical society is in charge. He has been forty years in Siam. Few of us have the missionary spirit and therefore cannot understand why men and women go into foreign fields to devote their lives to people in foreign lands whose civilization such as it is, is so different from ours. One has to live in close contact with a returned missionary to become imbued with the zeal that possesses the missionary, and to appreciate him.

An exhaustive clinical study has been made on Vilhjalmur Steffansson, the arctic explorer and his companion for three years, Andersen, to determine the effect of an exclusive meat diet. These men with their cooperation were kept on an exclusive meat diet for one year with no resulting high blood pressure, arteriosclerosis or nephritis or any other ill effect noticeable by modern methods of investigation. Several years ago Steffansson returned from the arctic after seven years, at least five of which years he subsisted on an exclusive meat diet, mostly raw meat without salt, and remained in perfect health according to examination made by Clarence W. Lieb, New York City, *Journal A. M. A., July 6, 1929.*

The next meeting of the Radiodogical Society of North America will be held at Toronto, December 2nd to 6th, inclusive. Headquarters at the Royal York Hotel. The facilities and accommodations at this hotel are the best in the history of the society and we expect to have a banner meeting in every way. The scientific program, clinics, scientific and commercial exhibits will be of the highest character and exceedingly interesting and instructive. The program will be interesting not only to the radiologists but to the physicians practicing other medical specialties and general practice as well. A cordial invitation is extended to all physicians as well as radiologists to attend the Toronto meeting. Secure reservations at once through Dr. W. C. Kruger or Dr. G. R. Reid, 20 College street, Toronto, Canada. Excellent arrangements have been made to take care of the visiting ladies.

REVISED MEDICAL PROCEDURE IN NEBRASKA WORKMEN'S COMPENSATION CASES

To enable injured workmen who come under the provisions of the Nebraska Workmen's Compensation Act to receive the benefit of additional medical consultation, and in order also to enable the Compensation Commissioner to have the benefit of such consultation, the Commissioner will appoint medical advisors to assist him in the administration of the law. Arrangements will be made whereby the medical advisors may be paid by the employers or the insurance companies on the basis of medical service requirement in each case.

The medical advisors shall be appointed by the Compensation Commissioner and designated as his assistants. He shall fix their tenure of office, define their duties, and arrange for their remuneration. These medical advisors shall function under the direction of the Compensation Commissioner as he may direct.

It is the intention of the Commissioner that when a workman is injured the employer shall proceed as at present, but it is insisted that he call in the best doctor available. Rule 12, promulgated by the Compensation Commissioner, provides that—

"In all cases of fracture and dislocation, of infection, of third degree burns, of eye injury where disability results, and all other cases where disability extends over a period of two weeks, the physician treating the case in the first instance shall immediately make a report in detail to the Compensation Commissioner of the nature and the extent of the injury. Thereafter he is required to make a report at least weekly showing the condition of the injured workman, the method of treatment, and the progress made towards recovery. The attending physician shall also immediately furnish either to the Compensation Commissioner, to the employer or to the insurance company, when requested so to do, the x-ray plates used in his diagnosis."

The medical advisors shall meet at the call of the Compensation Commissioner, and shall examine the first reports of accidents and supplemental reports referred to them. After a review and consideration of these reports the medical advisors may, in their discretion, make a physical examination of the patient, submit recommendations to the attending physician as to treatment, specific procedure such as an operation, application of mechanical appliances, or otherwise.

The medical advisors shall recommend forms for use by the attending physician or surgeon in submitting his reports to the Compensation Commissioner. These forms shall provide for brief remarks, supplementing the preliminary and subsequent reports, of any fact or factors that influence the progress of the case. When the local attending physician or surgeon, the employer, insurance carrier, or injured workman desires to call in a consultant he shall make request of the Compensation Commissioner, stating the nature of the advice desired, the urgency thereof, and submit the names of two or more physicians or surgeons desired in consultation from whom a selection may be made and authority granted. Except when a distinct emergency exists at the inception of the case the Compensation Commissioner will decline to approve bills for services rendered by any consultant unless the consultation has been authorized by the Compensation Commissioner. The promptness and completeness of the reports submitted by the attending physician or surgeon in each case and his adherence to the provisions of Rule 12, and the recommendations made by the medical advisors will guide the Commissioner in reviewing his bill for medical services rendered.

The foregoing rules and regulations governing medical treatment in compensation cases under the Nebraska Workmen's Compensation Act are hereby adopted and made effective this 19th day of June, 1923, by the Department of Labor.

Approved by:

(Signed) Arthur J. Weaver, Governor.
(Signed) Ernest M. Pollard, Secretary.

THE SOCIETIES

The Elkhorn Valley Medical Society met at the Country Club, Norfolk, July 31, in an all-day session, under the trees. The program featured general practice and was, with several exceptions, put on by general practitioners. All papers were well discussed. The angle of the specialist was brought out in the discussions by those working in special lines, to the benefit of all. Forty physicians attended, most of them accompanied by their ladies. Luncheon was served on the club grounds by a professional caterer.

The program as carried out follows: Modern Treatment of Eclampsia, Dr. A. J. Schwedhelm, Creighton, Neb.; Summer Diarrhoea, Dr. Walter Benthack, Pierce, Neb.; Immunization and Acute Infectious Diseases, Dr. A. E. Cook, Randolph, Neb.; Serum Treatment in Acute Infectious Diseases, Dr. R. C. Gramlich, Walthill, Neb.; Diagnosis Gastric Ulcer, Dr. Harry Morris, Newman Grove, Neb.

Surgery—Diagnosis Acute Appendicitis, Dr. Morris Neilsen, Blair, Neb.; Stomach Symptoms and Appendicitis, Dr. W. S. Evans, Columbus, Neb.; Abdominal Drainage, Dr. C. G. Moore, Fremont, Neb.

Allergy—Dr. E. C. McQuiddy, Omaha, Neb.

The meeting was generally acclaimed one of the most interesting in years.

The Cedar-Dixon-Dakota-Thurston-Wayne Counties Medical Society held their annual picnic at the Wayne Country Club, August 14. The doctors brought their families and enjoyed a sumptuous dinner after which the day was given over to sports.

The Custer County Medical Society held its annual picnic meeting at Calloway, August 13. The Custer County Bar Association was invited to participate. After the dinner the following program was presented: "Doctors and Lawyers," by Dr. R. W. Fouts, Omaha; "Lawyers and Doctors," Attorney N. T. Gadd, Broken Bow; "Fractures," Dr. R. D. Schrock, Omaha.

UNITED STATES CIVIL SERVICE EXAMINATIONS

The United States Civil Service Commission announces the following open competitive examinations: Associate Medical Officer, Assistant Medical Officer, Physician, $3,800 a year; Associate Physician, $3,200 a year.

Applications for associate and assistant medical officer must be on file with the Civil Service Commission at Washington, D. C., not later than December 30.

The examinations are to fill vacancies in hospitals of the Public Health Service, the Indian Service, and in other establishments of the Federal classified service throughout the United States.

Competitors will not be required to report for examination at any place, but will be rated on their education, training, and experience.

On account of the needs of the service, papers will be rated as received and certification made as the needs of the service require.

Full information may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board of Examiners at the post office or customhouse in any city.

HUMAN INTEREST TALES

Dr. L. Albertson has located at Axtell.

Dr. and Mrs. J. P. Lord, Omaha, have returned from Europe.

Dr. C. D. Irwin, has located at Hastings, his boyhood home.

Dr. Chauncey L. Anderson, has located at Stromsburg the place of his birth.

Dr. A. J. Schwedehelm, Creighton, spent the month of August in a Chicago pediatric clinic.

Dr. J. M. Triplett, Grand Island, has been appointed physician to the Soldiers' Home at Burkett.

Dr. A. B. Cherry, Pasadena, Calif., former practitioner at Winside, visited in Nebraska in July.

Dr. C. M. Pierce, Chadron, attended postgraduate work given at Harvard Medical College during June.

Dr. Hodson Abbott, of Minden, has been appointed resident physician of the Presbyterian hospital, New York.

Dr. Ralph J. Malott formerly of Salt Creek, Wyo., has located at Scottsbluff in association with Dr. E. E. Griggs.

Dr. L. S. Twinem, North Platte, has gone to the Rotunda hospital, Dublin, for postgraduate work in obstetrics.

Dr. W. I. McFarland, formerly of Belleville, Kansas, has purchased the Boyce hospital at Hebron and will operate it.

Dr. Mary Baer, physician-missionary from Chirali, India, visited in the state of Nebraska recently and spoke in Emerson.

Dr. and Mrs. J. R. Taylor, Sidney, motored to North Carolina recently and enroute the doctor attended clinics in Chicago.

Dr. Harold Lammers, New York City, a "Creighton" graduate spent a month at Hartington among the scenes of his youth.

Dr. and Mrs. G. W. Reneker, Falls City, drove to Keosauqua, Iowa, and attended a reunion of the Reneker family last month.

Dr. Olga Stastny, Omaha, has been elected President-elect of the Woman's National Medical Association at the recent annual meeting.

Dr. A. B. Dunn formerly of Nebraska City has gone to Glendale, Calif., to locate and will be connected with the Glendale Sanitarium.

Dr. C. J. Langenbahn, from St. Paul, Minn., has located at Chadron in association with Dr. C. M. Pierce. He will do surgery and obstetrics.

It is reported that our friend Dr. John W. Koutsky of Omaha has become an oil baron by appearance of a gusher on his property at Wametta, Okla.

A Mrs. Newberry of Wayne has been fined for unlawful practice of medicine. She sold an ointment and pretended the diagnose and treat disease with it.

Dr. and Mrs. Sanford Gifford, Omaha, have gone to Europe to be gone until the latter part of November. The doctor will spend his time at European eye clinics.

Dr. and Mrs. A. P. Fitsimmons, Tecumseh, visited a brother in Phoenix during July. While on their return trip word reached them that the brother had suddenly died.

Dr. Charles M. Swab, Omaha, addressed the Colorado Congress of Ophthalmology on June 29, on "Food Poisoning and its Relation to Ophthalmology." He also attended the Pacific Coast Oto-Ophthalmological Society meeting at Salt Lake City.

OUR COUNTRY DOCTOR

A Requiem

You'll know him by his muddy shoes,
His clothes of last year's style;
The weary look about him,
The sweetness of his smile.

You'll know him when the school's let out,
And see the children flock
To catch a cheery word from him,
And shout their "Hello, Doc!"

You'll know him, too, at midnight,
When he rides thru' sleet and rain,
And wades deep in a swollen stream,
To reach your bed of pain.

You'll know him in the dawning,
Still sitting by your bed
In damp clothes—Oh, so patient—
His hand upon your head.

He was never in a hurry,
When a kindly word could cheer;
And the little jokes he saved for you
Are memories most dear.

He didn't fall in Flanders Field,
Where crimson poppies grew;
He wore himself out, waiting
On folks like me and you.

He had no cross in Flanders Field,
'Mid poppies' crimson hue;
The cross is in the aching hearts
Of folks like me and you.

—Mary M. Hopkins.

Copied from Roycrofter.

NECROLOGY

John Mills Mayhew, Lincoln, Neb.; University of Illinois College of Medicine, 1895; practitioner at Lincoln for twenty-eight years; specialist in internal medicine; chief of the medical staff of the Lincoln General hospital; major in medical corps of the army during the World War and head of medical staff of the hospital at Camp Travis, San Antonio; one of the most active and forceful members of the Nebraska State Medical Association for a quarter of a century; co-author with Booth Tarkington of some college plays; a musician of note; died suddenly August 5, 1929, aged fifty-nine years.

John Mills Mayhew

Willis J. Raynor, Grand Island, Neb.; Medical College of Ohio, 1880; physician to the Soldiers' and Sailors' Home at Burkett, the past five years; in the army medical service at Denver in his early medical career; in service in the Philippines with the 25th Infantry in 1898-1899; also practitioner at St. Paul and Cushing, Neb. in his early career; died July 14, 1929, aged about seventy-three years. A son, Dr. W. J. Raynor Jr., is in practice in Denver.

Noah Hayes, (retired) Lincoln, Neb.; Georgetown University School of Medicine, 1876; last known survivor of the ill-fated Polaris Arctic expedition of 1871 of which he was surgeon; resident of Lincoln for past fifteen years; died at the Soldier's Home at Milford, August 6, 1929, aged eighty-five years.

E. C. Dolan, Sacramento, Calif.; Creighton University College of Medicine, 1925; pursued special study since in New York and Detroit for several years; boyhood resident of Omaha; located in Sacramento since last September; died in the latter place after a month's illness, aged about thirty years. Burial in Omaha. A brother, Dr. E. T. Dolan lives in Kansas City, Mo.

Sylvester A. Preston, Fremont, Neb.; University of Nebraska College of Medicine, 1900; practitioner at Fremont for the past twenty years; earlier in practice at Madison, Beemer, Howells; active member Nebraska State Medical Association and for several years and until recently councilor for the Fifth district; a former president of the Elkhorn Valley Medical Society and of the Dodge County Medical Society; county physician of Dodge county at the time of his death; died after an illness of some weeks in an Omaha hospital August 13, 1929, aged sixty-two years. A son, Dr. John Preston, some time ago took up the threads of his father's practice.

Robert A. Billings, Comstock, Neb.; Kansas City Homeopathic Medical College, 1893; was found unconscious in his car, death following shortly, near Brownlee, Neb., while on a camping trip. Evidence found in car indicated probable drug addiction. Aged about sixty-eight years.

Leonard Muir, Alvo, Neb.; Lincoln Medical College, 1897; practitioner at Alvo for 31 years; died of pneumonia in a Lincoln hospital August 15, 1929, aged about fifty-five years.

Charles H. Maxwell, Dakota City, Neb.; Rush Medical College, 1883; native of Kewaunee, Ill.; widely known and beloved practitioner of Dakota City for forty-six years, previous to which he practiced for a short time at Villisca, Iowa; member Nebraska State Medical Association; somewhat of an authority on the early history of northeastern Nebraska and of the folklore of the Winnebago Indians and primitive methods employed by the Winnebagoes in treating their sick; a true friend of the Winnebagoes; his famous Clydesdale horse, buckboard and himself were familiar figures for many years; died July 19, 1929, aged sixty-nine years.

BOOKS RECEIVED

Clinical Aspects of Venous Pressure by J. A. E. Eyster, B. Sc., M. D. Cloth, 8 mo., 134 pages. Price $2.50. The Macmillan Co., 1929, New York.

Clinical Laboratory Methods by Russell Landram Haden, M. A., M. D. Cloth, 8 mo., 307 pages with 69 illustrations and 4 color plates. Price $5.00. The C. V. Mosby Co., St. Louis, 1929.

Osteomyelitis and Compound Fractures by H. Winnett Orr, M. D., F. A. C. S. Cloth, 8 mo., 202 pages illustrated. Price $5.00. The C. V. Mosby Co., St. Louis, 1929.

Principles and Practice of Electrocardiography by Carl J. Wiggers, M. D. Cloth, 8 mo., 220 pages with 61 illustrations. Price $7.50. The C. V. Mosby Co., St. Louis, 1929.

OZONE AND VENTILATION

The ill effects from lack of ventilation do not arise from any contaminating substance in the air but are due to the physical properties of the air—chiefly its lack of cooling power. "Bad air" is made so by being too warm, too moist or too stagnant. While ozone has been suggested as a means of neutralizing the carbon monoxide in the air, particularly in garages, this is based on the misconception that it combines with carbon monoxide in low concentrations. Its use in garages is inadvisable, as ozone, by its odor, will give a feeling of false security and thus foster a tendency to cut down ventilation. There has been no sound scientific work brought forward to show that there is any place whatever for ozone in the problems of ventilation; on the contrary the inefficacy of ozone generators has been demonstrated by careful scientific experiments. (*Jour. A. M. A.*, June 29, 1929, p. 2186).

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THE PRESENT-DAY CONCEPTION OF TUBERCULOSIS*

MILES J. BREUER, M. D., F. A. C. P.,
Omaha, Nebraska.

One hears a good deal of complacent congratulation expressed nowadays over the marvelous progress that has been made in the control of tuberculosis. A sort of loose general impression seems to prevail that the great white plague has been, if not conquered, at least severely disciplined. While it is true that there has been a lowering of the death rate from tuberculosis all over the world, this lowering is merely parallel with the lowering of the general death rate.(1) In only two countries, Great Britain and the United States Registration Area, has there been any relatively greater decline in the tuberculosis death rate as compared with the general death rate; and in these the difference is a very small one.

Krause has demonstrated that the decline in the tuberculosis death rate has been parallel with and due to the general improvement in economic conditions; people now live in more comfort and cleanliness.(2) He casts serious doubt on any belief in a decline in tuberculosis death rate due to intentional efforts to combat tuberculosis. The decline began about 1850, at the time that general living conditions began to improve and long before the tubercle bacillus was discovered and before society began to take any conscious thought of fighting tuberculosis.

At the present time, one death out of ten is due to tuberculosis. Of course, people cannot live forever; they must die of something. The fact that distinguishes the tuberculosis death rate is that the death rate from the five other principal causes reaches its highest point at about the age period of seventy years, whereas in tuberculosis, the peak is between twenty and thirty years of age. During the third decade of life, one-half the total deaths are due to tuberculosis.(3) At life's most useful and promising age-period, one-half the deaths are due to a cause, the prevention of which is thoroughly understood. At the same time, to each annual death from tuberculosis, there are nine active cases of the disease(4), or nearly three active cases for each 100 of the population. Surely that is not a state of affairs to be complacent about.

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*Read before annual meeting Nebraska State Medical Association, Omaha, May 16, 1929.

However, there are good reasons for it. It is only something like fifteen years that even those medical men who give their entire efforts to tuberculosis, have begun to grasp the true significance of this disease in its entire setting, as related to the individual and to society. The correct conception of tuberculosis has not yet found its way to the rank and file of medical practice, while the popular ideas of it are grossly erroneous and misleading. Yet, the nature of the disease is such that no progress can be made toward lowering its death rate, without the most thorough and widespread understanding of it throughout all layers of the population. The first step in combating tuberculosis must be education.

This paper is a brief review of tuberculosis as understood in the light of modern knowledge.

ETIOLOGY

Tuberculosis is the price paid by the human race for civilization. It is the penalty paid by the individual who is not thoroughly adapted to his social and economical situation. Civilization preserves the unadapted individual, who under the laws of natural competition would be eliminated early in the struggle for existence; it permits him to propagate and increase his unadapted biological stock, which in the natural struggle would die out. And having preserved the individual poorly adapted to stress, civilization proceeds to subject him to stresses, which in modern life are an increasing burden even to the fittest. The tubercle bacillus is a mere incident in this process of the breakdown of the unadapted individual under stresses too severe for him.

The principal factor in the production of tuberculous disease is environment(5). Environment means any and every experience of the individual that affects his tissues. Family maladjustment is as much "environment" in this sense as is living in the slums. Vocational misfits, influenza, business reverses, too much drive on the job, repeated pregnancies, are all environment; and in them lies the explanation of tuberculosis much more directly than in the existence of the tubercle bacillus.

Evidence has been produced abundantly and repeatedly that practically all individuals in a civilized population have become infected with the tubercle bacillus by the time they are fifteen years of age(2-5-6). The conclusion is based on the widespread distribution of tuberculin-allergy, on x-ray findings, physical findings, and post-mortem evidence. The tubercle bacillus seems to be a normal inhabitant of the human body, and its mere presence is not the criterion that determines disease.

At present there are several different views as to the manner in which tubercle bacilli find their way into the human body. Cornet's hypothesis of sputum drying into dust and carrying with it tubercle bacilli into the patient's lungs with inspired air, and Flügge's idea of the transmission of tubercle bacilli by droplets of spray in talking, coughing, etc., offer explanation for indoor infection. The view of Aufrecht and Calmette suggests that infection takes place by means of the ingestion of anything that has been in contact with tuberculous sputum, and the entry of the germs through the tonsils, by lymphatics, and through the gastro-intestinal tract. Krause has recently put forth the idea that as most individuals are infected with the tubercle bacillus in early childhood, during the very period when children play on the ground and put their hands and everything else into their mouths, a great deal of transmission must be due to ground infection out of doors. Of these various views, each probably contributes its quota of truth in explaining the source and transmission of bacilli.

The fact remains that practically everyone acquires the bacilli. Yet a relatively small proportion of persons suffer with the manifest disease. To explain the cause of this, the question of allergy must be examined.

ALLERGY

When tubercle bacilli are inoculated for the first time into a normal, non-infected body, human or animal, they are rapidly carried from the site of inoculation throughout the entire body, and no symptoms of illness appear. If the quantity of inoculated bacilli is large enough, the animal may die in a short time, with none of the usual symptoms of tuberculosis whatever. If the dose is small, no external or clinical effects will be apparent. But something has occurred within the body nevertheless.

For if now a second dose be given, the subject becomes ill with all the acute manifestations of a tuberculous infection. The bacilli, instead of being distributed over the body, are stopped at the site of entry, where a pronounced inflammatory reaction occurs, proceeding to a necrosis if the dose has been large enough. The second inoculation produces a tuberculous lesion and tuberculous disease, the intensity of which depends upon the size of both the first dose and of the second dose . A relatively small proportion of the bacilli are carried past the site of inoculation to the nearest lymph node. If the dose is small, all the bacilli may be destroyed at the site of inoculation or in the lymph node. If any remain as the reaction subsides and the lesion heals, they are enclosed in a dense wall of fibrous tissue, which renders them ineffective to injure their host. This reaction to a second and subsequent doses, due to the sensitization by the first dose, is termed allergy.

It might seem at first thought that allergy is a disadvantage to the body. But, in two ways it is helpful. Because of it, the tissues are stimulated to build a fibrous wall around the bacilli; and because of it the body will readily recover from a much larger dose than one which on the first inoculation would produce death. It is in reality a protection; and it remains potent as long as encapsulated bacilli remain within the body. If the bacillus is eventually overcome and the focus heals, allergy gradually disappears, and the body will again react as to an initial dose.

If the initial dose has been a large one, it produces a high degree of sensitization; and a second dose small in amount will produce a violent reaction, which may be severe enough to kill the patient. Or successive inoculations may come so close together at times when the system is weakened by reactions to preceding inoculations, that the resulting symptoms may be severe enough to cause death.

The point to emphasize is that the manifest phases of the illness, the fever, toxemia, necrosis, prostration, loss of weight, are not primarily due to the tubercle bacillus, but to the sensitized state of the body known as allergy. Allergy, while serving fundamentally to protect the patient, may under certain conditions overreach itself and destroy him. Non-allergic persons do not have inflammations, and do not get sick following an infection, though they may die from it. Infants and savages furnish examples of such a condition. The clinical and pathological phases of tuberculosis always mean that a re-inoculation has taken place; and are due to an intoxication by the focal products produced by the immune reaction, rather than to any specific poison from the tubercle bacilli. An injection of tuberculin, for instance, into a non-immune person, produces no reaction, however large the dose may be.

PATHOGENESIS

Cases of clinical illness from tuberculosis fall into two types. The commonly known chronic type, when it first comes to the doctor, already has a history of many years' standing behind it. The patient has been up and down a number of times; first a period of indisposition followed by improvement; then slight illness and improvement again; feeling fairly good for a while and then down again. Each succeeding time he is down, the patient is lower and more seriously ill than before. These episodes are called "colds," "breakdowns," "influenza," etc., until the time eventually arrives when a diagnosis of tuberculosis is plain. How soon this time arrives, depends upon the diagnostician as well as upon the actual rapidity of the progress of the disease.

The second type of case is a sudden flare-up. Following some severe exertion, an infection, or other stress, the patient abruptly falls acutely and severely ill. An athlete will come down with acute tuberculosis after a strenuous event, a mother after a pregnancy and lactation; influenza or typhoid fever may be followed by such an attack, which is the beginning of a many years' struggle against tuberculosis.

From the above it may seem that the disease has two different mechanisms. All sorts of explanations have been offered to account for them, involving the virulence of the bacilli and the resistance of the patient. As a matter of fact, these two clinical types, as well as the occurrence of acute miliary tuberculosis, tuberculous meningitis, tuberculous pneumonia, are all explainable as a single process without calling in any difference in bacterial virulence, or any mysterious factor of individual resistance. There is a simple pathological unity underlying all the varying clinical manifestations of tuberculosis, which is the encouraging factor about the present day conception of the disease. In practice there is no real dividing line between the acute and chronic types; they are merely the extremes of a series, between which the man who sees a great deal of tuberculosis finds all possible gradations.

We have noted that a first infection is acute and generalized, but confers a pathological immunity: and that subsequent infections are localized and chronic. These subsequent infections result in tubercle formation. A tubercle is a focus of bacilli surrounded by a fibrous-tissue capsule of greater or less density and of greater or less value as a protective covering to prevent biochemical interchange between the bacilli within and the tissues without.

The body has a powerful natural tendency to fibrose and sclerose this capsule, to make it denser and more impermeable. That is its method of protecting itself against further depredation by the bacilli. A thoroughly enclosed and hardened tubercle is harmless and does not interfere with good health. Numerous influences may result in weakening its wall and releasing the activity of the enclosed bacilli. A re-infection by bacilli from the outside produces an allergic reaction of all the body tissues; but this reaction is strongest about a tubercle and tends to soften it; metabolic traffic occurs through the tubercle wall; toxins go out, supplies for the bacilli go in; the bacilli may even break out and spread. The hyperemic reaction about the tubercle may be produced by any infection, an influenza, or a severe cold, the stress of athletics or of physical labor or of nervous strain. Tuberculin from the tubercle and the toxic products of the surrounding allergic reaction are sent into the system, and produce the symptoms of tuberculous disease.

The postpeurile ages of our population are pretty thoroughly infected. In the average non-diseased individual the tubercles are well encapsulated. Reinfections from without or by spreading of bacilli from old foci occur constantly, but are small and far apart. Nevertheless they gradually result in the formation of more and more tubercles. The progress of the infection, though slow and without effect on the clinical health, is observable post-mortem, and especially by x-ray. Roentgenologists have noted the objective appearances for a long time, though the pathological interpretation is but recent.

The clinical breakdown of the patient, with manifest tuberculosis involves no different mechanism than the above, except in degree. Through months or years of hard work, infection, poor nutrition, stress of any kind, there is a more rapid increase in the number of foci, by re-infections from without or by the spreading of bacilli from old foci within. Each new group increases the number of sources for further spread. For a time the patient is not severely hit by the allergic reaction of the re-infections, and recovers readily. But the rate of spread increases in geometric ratio, and the allergic reactions become more severe correspondingly. Re-infections occur oftener, and the patient has less time in which to recover between them. Eventually the patient realizes that he is ill, and that he has been so for a long time. By the time the diagnosis is made, he has been sick for some years, and there have been several periods of development and subsidence.

The termination of untreated or unsuccessfully treated cases of this type occurs when re-inoculations which at this stage are always from within the body, become so extensive and so frequent that the patient has no time to recover between them. He is now a "consumptive."

The areas in the body where tubercles may exist and give no sign of their presence, unless they are extensive enough to give the systemic symptoms of the tuberculin effect. This is true of the greater portion of the lungs and of the mediastinal and mesenteric lymph nodes. A tuberculous node in the neck, because it attracts attention, causes a lot of alarm. Ten times as much infection may exist in the mediastinal nodes without the patient or his physician knowing anything about it. But if, as occasionally happens, one of the mediastinal nodes ulcerates and ruptures into a bronchus, then there are bacilli in the sputum and an excited diagnosis. As a matter of fact the bacilli in the sputum mean that surgical evacuation has taken place, and the patient is better off than one without a positive sputum. Or, an ulcerating node may rupture into a vein, producing generalized miliary tuberculosis and a quick death.

A hundred or a thousand tubercles may exist in the lung and the patient not be particularly sick. There may be ten tubercles in the meninges, and severe disease and death result. There may be one tubercle in the larynx, producing a distressing and disabling condition. A vast amount of infection may exist in the mesenteric lymph nodes without any external signs; a half dozen tubercles in a joint or a kidney cause severe symptoms, illness, and disability.

What has determined the difference between the silent infection on the one hand and the clinically sick patient on the other? Pure accident; merely the haphazard chance of where the tubercle happened to localize. The amount of infection, the resistance of the patient play minor parts in the pathogenesis of tuberculosis, beside the mere fortuitous factor of accidental location of the tubercle. Chance alone determines whether the bacilli locate in this place or that; but upon it depend the patient's health and life.

ACTIVITY

From these considerations it is evident that a great deal of tuberculosis may be going forward in the body in a pathological sense, without the patient's being ill or aware of anything. There is a lot of pathological activity present in many people who to all practical purposes are perfectly well.

If we accept the meaning of the term "activity" in the above sense, everybody has some. Sometimes it can be detected by clinical examination or x-ray in clinically well persons; sometimes it exists and cannot be discovered. Obviously, we cannot treat all those who are infected on pathological or immunological evidence, for that would mean the entire population. Where then draw the line?

On the other hand, a patient may have no physical or x-ray signs at all, and yet have attacks of hemoptysis. He is "active." There may be underweight, disinclination to work, amenorrhea, or frequent and protracted colds; and nothing demonstrable by x-ray or physical examination. That patient is "active." Another may be full of clinical or x-ray signs; if he feels good, works hard, and remains that way, he is not "active." There is no mystic criterion of physical findings or x-ray signs to indicate activity or inactivity. In the words of Krause: "There is no anatomical change or combination of changes (except complete fibrosis) that has anything intrinsic to assure activity or inactivity of focus. Every one of them can exist without symptoms or can lead to symptoms (activity) under proper conditions, which conditions are determined, not in the focus, but in body condition or organ state."(5) A patient who is sick is active, regardless of technical signs.

The word "activity" has been conjured with too much. Pathologists feel that it is an inapt expression, and are discounting its use. The term "manifest disease" is finding favor in its place.

RESISTANCE

The pathological phase of resistance to tuberculosis is allergy, and has been discussed. If we interpret the term "resistance" in the clinical sense as meaning protection against illness from the disease, allergy is the opposite thing. It is a sensitization, a predisposition to the clinical states of the illness.

From the standpoint of the patient's health and safety, the only protection against tuberculosis is the fibrous wall around the tubercle. If this wall holds, and mechanically shuts in the bacilli and prevents circulatory exchange of metabolic products between its interior and exterior, the patient is safe. The only real resistance consists in the firmness and impenetrability of this fibrous wall.

The balance between the holding power of the tubercle wall, and the forces tending to get through it, depends on numerous factors, bodily, environmental, hereditary, and acquired. Some persons have a good proliferative reactivity and quickly encapsulate the foci; they are not susceptible to clinical tuberculosis (though they are susceptible to cancer). In children, fibrosis takes place slowly and tubercle is not firmly formed. A re-infection occurring shortly after a tubercle has begun to form, causes the reaction about it to destroy its wall. An attack of measles or a pregnancy occurring before a tubercle has become firmly sclerosed, brings on an attack of acute clinical tuberculosis; but if it occurred a year or two later when good healing had taken place, it would be without harmful results as far as tuberculosis is concerned.

Good clinical resistance means:

1. That infection is quickly localized;
2. Firm fibrosis is formed;
3. Spreading is slow;
4. Evolution by re-infection is delayed.

Resistance or the lack of it does not enter as a factor into the occurrence of *phthisis florida* or of acute miliary tuberculosis. The former condition is due to oversensitization from too heavy an initial dose in a non-allergic individual, such as an infant or a savage. The latter condition is a pure accident of localization of bacilli, due to the evacuation of an ulcerating focus into a somatic highway as a vein or a large lymphatic duct. A close analogy is found in the difference between the general effects on the patient of an endocarditic embolus, in whether it lodges in a lung or in a coronary artery.

DIAGNOSIS

It stands to reason that a diagnosis early in the evolution of the "manifest" disease is an important thing. A correct conception in the minds of the physician and the patient as to what is going on and what is necessary to prevent disastrous consequences, will mean success if arrived at early, and a doubtful or hopeless struggle if left until too late.

Recent years have seen brilliant progress in the detection by clinical examination of tuberculous processes of low-grade intensity. The technic(7 8 9 10)) will not be discussed here, further than to say that the day is past when we depend for a diagnosis on the finding of the bacillus in the sputum or the tapping out of a "spot" in the chest.

In arriving at a diagnosis, the big question is not: Is tuberculosis present? for it probably is; but what is its relation to the patient's illness? The old attitude, in the presence of fever, cough, and debility, of being afraid to call it tuberculosis and considering everything else until tuberculosis has been rigorously proved, is now reversed. Such a case is now presumed to be tuberculosis until proved to be otherwise.

Furthermore, in arriving at a diagnosis, it must be kept in mind that the symptoms are due, not to the tubercle bacillus, but to the body's reaction to the bacillus. Thus, the low-reacting case, with a low fever and a low leucocyte count and a great deal of pathology, may be quite comfortable, but like a non-allergic case, is in the greatest danger. The acutely ill case is one that is over-sensitive because of heavy previous inoculations, and while also in danger, because the body may overdo the defense or because the defense may take place in a dangerous area; still the patient is better off because the symptoms are but evidence of a powerful reaction on the part of the body in its effort to localize and encapsulate the bacilli. Furthermore, the distressing symptoms call attention to themselves and elicit the proper medical attention.

The following are suggested as a criterion upon the basis of which the diagnosis of a "manifest" or so-called "active" condition may be made:

1. The presence of an anatomical lesion.
2. The presence of symptoms. In general this means a loss of capacity to tolerate stress, to which the body reacts by temperature, anorexia, fatigue, and dysfunction of the cardio-vascular, gastro-intestinal, and nervous systems.
3. The assurance that the symptoms are due to the infection. This is accomplished largely by a thorough and complete study of the patient and the elimination of other possibilities.

TUBERCULIN

For purposes of treatment, we are in search of factors that will promote fibrosis of tubercle. The patient's only hope lies in a firm investment of the bacilli in a fibrous sheath. The readiness with which this takes place depends partly upon the patient's natural constitutional tendency to react with fibrosis, and partly on the highest possible efficiency in utilizing what proliferative powers he does possess. Naturally, debilitative factors interfere with fibrosis. We are not in possession of any noteworthy means of promoting fibrosis. Calcium and parathyroid therapy are suggestive, but their value has not been demonstrated. But we have one agent that does seem to be of some assistance in stimulating fibrosis, and that is tuberculin. Tuberculin is useful for that one purpose, and for no other.

Tuberculin is difficult to use. It requires patience on the part of the physician and the patient. Results are not apparent at once, but require months of time. The effects of a tuberculin injection are exactly like those of a re-infection, but are self-limited in time, and the intensity and extent are under the control of the physician. The subject is so big that the details cannot be discussed here. In the words of Pottenger(10): "In writings on tuberculosis, many indications and contraindications for its use are given, but if one will analyze them carefully, they amount to about this: all patients who are favorable for cure are favorable for tuberculin treatment, and all patients who have serious complications which might reduce their chance for cure, are unfavorable for tuberculin treatment. This is true, but is as true of other therapeutic measures as it is of tuberculin."

REST

The second method that we have at our disposal to promote healing by fibrosis, is to protect the fibrous capsule when it has begun to form, from influences that tend to disintegrate it. A consideration of the factors that make toward the breaking down of tubercle, exertion, exposure, mental strain or depression, infection, pregnancy, etc., shows that they are all classifiable under the one caption of stress. Stress of any kind on the body tissues produces reactions that soften tubercle and release toxins and bacilli.

Therefore, in defining rest, we are involved in a relativism. What constitutes rest for that particular patient? A vacation trip in an automobile or confinement to bed? May he read? May he have visitors? The answer is purely relative. For a patient who has come down with tuberculosis while at his occupation of handling freight, washing windows at the railway station may be rest. For the girl broken down at her sedentary college studies, rest is nothing short of all day in bed without occupation.

Rest therefore means a relief from stress. The more nearly perfect the relief, the more rapid and certain the recovery. Even in those cases where a mere relative diminution in stress is clinically sufficient, the more complete the rest, the more rapid and efficient is the sclerosis of tubercle.

PROPHYLAXIS

Though the immediate present need in the fight against tuberculosis is early diagnosis, that is but a step in the right direction. For definite progress in the battle, not cure, but prevention of the manifest disease states is the important requirement.

In the past, prophylactic (as well as therapeutic) efforts have concerned themselves too much with the presence of the tubercle bacillus in the body. It seems to be difficult to get away from the conception of the avoidance of infection. Yet since we know that infection of civilized people is universal without manifest illness, why should we concern ourselves with the mere presence of the infection?

Perhaps at some millenium all the tubercle bacilli on earth will be eradicated. Today there is not even a speculative way of approaching that problem. The things that concern us are the factors that turn a silent infection into manifest disease.

The cause of consumption is not so much what the bacillus does as what the patient does. Any and every event that depresses his health contributes toward producing his manifest disease. A common cold is not so important *per se*, but because it aggravates quiescent tubercle. Overwork must be avoided, pregnancy carefully handled, always with a view to the possibility of stirring up a silent tuberculosis. Not the family history, not x-ray phantoms or rales in the chest, but the patient's tolerance of stress, should be the warning of how he is to conduct his life if he is to remain well and safe. Everybody has his limit, high or low; to be safe from manifest tuberculosis, he must determine that limit by experience and live within it.

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DISCUSSION

LAWRENCE T. SIDWELL, M. D. (Kearney): Dr. Miles J. Breuer's paper on "The Present Day Conception of Tuberculosis" is excellent. A few points he makes that I wish to stress are as follows:

"The correct conception of tuberculosis has not yet found its way to the rank and file of medical practice, while the popular ideas of it are grossly erroneous and misleading." Many physicians seem afraid or unwilling to diagnose tuberculosis. Some feel it is necessary to find the germs in the sputum before doing so. Their absence means nothing. A positive diagnosis is possible without finding them. The following danger signs should make us suspicious and help lead to an early diagnosis and proper treatment: Loss of weight and strength, slight afternoon temperature, nervousness, tired feeling, a cough that hangs on unduly long and blood streaked sputum.

Our medical schools should give more attention to tuberculosis. General hospitals should make some provision for tuberculars. There is too much phthisiophobia and too little knowledge about the disease. The public should be educated and come to realize that tuberculosis is present before the third stage is reached. Everyone should know what the early symptoms are and that early tuberculosis can be cured in practically every case. They should also know how to prevent the spread of the disease and that most cases are infected as children.

Rest is an essential factor in curing tuberculosis, in fact, an absolute necessity in practically all cases. Exercise is also essential but not at the beginning and not until the disease has improved. Graduated exercise is a study in itself.

There are several points in the Doctor's paper that I am not wholly in accord with. First: In regard to the use of tuberculin. I feel that exercise properly used will produce an autoinoculation which can be controlled better in most cases and one does not run the danger that you do with tuberculin, with the same end results.

Another thing I wish to call attention to is his statement that there are three active cases of tuberculosis for each 100 of the population. I am afraid that he has made a mistake in his figures. If this were true it would mean that we had 40,500 active cases in this state. He says there is one death for every nine active cases which would mean approximately 4,500 deaths per year in Nebraska and this is just ten times too high.

I cannot entirely agree with him that the lowering of our death rate is merely parallel with the lowering of the general death rate. The death rate from tuberculosis 25 years ago in the United States was approximately 200 for every 100,000 of the population. It now is approximately 80 per 100,000—a 60% reduction and still decreasing. Nebraska's death rate has been reduced from 100 per 100,000 population 25 years ago to about 33 per 100,000 at the present time. Incidentally Nebraska's death rate from tuberculosis is the lowest of any state in the Union.

E. W. ROWE, M. D. (Lincoln): I have listened with much interest to Dr. Breuer's paper. The inside story of tuberculosis reads like a great historical novel. The mysteries of medical science are as intriguing as any of the great problems facing modern progress. Our conception of allergy as applied to the disease is a scheme which so far seems to fit like a shoe. It explains the ups and downs in the life of one suffering from pulmonary tuberculosis. It widens our conception of much that heretofore was emperical. In his general picture Dr. Breuer has discussed in a limited way the diagnosis of tuberculosis. Perhaps this is the reason that roentgenology has received but a passing mention. Let me say that the workers in both tuberculosis and roentgenology are in closer agreement than ever before. The old spirit of antagonism, if it ever existed, has disappeared. It was to be expected that certain physicians would resent the invasion of their field which hitherto was almost exclusively occupied by them. At first the roentgenologists passed up to the internist a good deal that was untried and overenthusiastically presented. On the part of the internest a new relationship had to be established.

There are still too many interpretations attempted by inexperienced physicians. Competent services by consulting roentgenologists are now available in pulmonary tuberculosis. The roentgen rays should be employed in the early diagnosis and therefore as a check to the progress of the disease. Some use and rely on the roentgen ray far more than others. The uncanny skill of a highly qualified roentgenologist is one of the brilliant accomplishments in the field of medical endeavor. Those who know the value of roentgen interpretation know there is no greater aid in arriving at a pathological or clinical evaluation of a case.

A good roentgenogram will reveal the present state of the disease and if carefully studied, the origin of the process, the periods of activity and tissue reaction. All the pathological processes may be seen from the softer shadows of infiltration in the formation of early tubercles, to the extensive stage of involvement with cavitation. The roentgenogram is a record of the reaction of the normal tissue of the body in the organs exposed to the invasion of the tuberculous bacilli. It is important as a chart to the clinician in the evaluation of his case.

DR. BREUER (closing): I fully expected somebody to disagree with those figures. I was astonished myself when I received them. A letter to the National Tuberculosis Association will bring a pile of material, the chief feature of which is evidence that the people in that office seem to have studied the question very thoroughly. I was convinced their figures were fairly correct. I checked up with two personal letters before I dared put these figures in my paper. I believe I will let them stand. I think these figures are fairly authentic.

SOME PRACTICAL CONSIDERATIONS OF MALNUTRITION IN THE CHILD*

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Definitions in medicine are rather inadequate, therefore, rather than define malnutrition, I shall attempt to describe what in my opinion is meant by a malnourished child. The material for this presentation is based upon a study of over five hundred children, clinically malnourished. A small number, to be sure, from which to draw conclusions, yet, since these data correspond so closely to the facts obtained from other reports, I have taken the privilege of offering the findings to you in hope of stimulating discussion and a better understanding in the relationship of physician, parent, and child.

To begin with, the malnourished child can be recognized by his general appearance. He is usually tired, may be bright or dull, with circles under his eyes. His skin may be moist or dry, and usually presents an inferior texture when compared with the skin of the robust child. The extremities are cold, though not cyanotic. He is usually poor in adipose tissue, although we frequently find malnourished children who are adequately supplied with fat. These children appear phlegmatic, with poor muscle tone. The deficiency in muscle tone reflects itself in constipation, poor posture, easy fatiguability, and occasional vague and indefinite pains in the legs. Very frequently this muscle weakness is the cause of eneuresis, so prevalent in this type of child. The malnourished child is frequently nervous and irritable. This condition is a considerable source of trouble in the management of these children since it is both a result as well as a cause of malnutrition. Thus unconventional habits of various types and gradations, temper outbursts, likes and dislikes, whims and fancies toward certain foods almost always occur especially in those children of the so-called better classes.

While malnutrition may begin in early or late infancy it usually becomes prominent during the pre-school years and extends through the period of pubescence. In this brief description I have purposely left out the adenoid facies which a good many malnourished children present. I believe that, while in many instances infected tonsils and a superabundance of adenoid tissue interfere with proper metabolism, that these conditions are more frequently the result, than the cause of malnutrition. I make this statement because we find many undernourished children who had their tonsils and adenoids removed in the hope of improving the condition. After a short, temporary gain in weight they lapse back to where they were before the operation. It can not be denied that focal infections interfere with proper physical and mental growth. Bad tonsils and carious teeth should, of course, receive attention in the treatment of malnutrition, but I am not in sympathy with those who lay the entire blame for malnutrition on the upper respiratory tract.

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*Read before the annual meeting Nebraska State Medical Association, Omah, May 14, 1929.

ETIOLOGY

My experience has been that by far the most prevalent cause of malnutrition, particularly where underweight, tiredness, easy fatiguability, are the prominent factors, are faulty feeding methods employed by parents whom Aldrich calls "calorie stokers." We live in an age of "ballyhoo." Every institution of commerce interested in the sale of its wares has suddenly turned to educating the public. The "information" put out by well paid circus barkers is handed down in symphony and song, seasoned with a proper repertoire of "human interest" stories and jokes. Thus the tobacco vender distributes information on how to avoid overeating—all one has to do is to reach for a certain cigarette instead of a sweet. The raisin growers are anxious to know whether you have had your iron today, the apple growers are interested in keeping the doctors away from the public, the organized milk dealers assure the public that milk is the very essence of good food, and so on down the list.

In addition to the industrial paternalism there has also sprung up another evil within the last few years that tends to interfere with the nutrition of the child. I am referring here to the numerous "nutritionists" of the cooking school variety who put out information that is more harmful than the misinformation put out by commercial houses. These nutritionists write article and books, deliver lectures before organizations on how to feed children, themselves having no definite ideas on what child nutrition involves. They usually have a few hazy, and disorganized notions on calories, carbohydrates, proteins, vitamines and roughage; and with this armamentarium they appear learned and distinguished educators on nutrition. The public, in turn, swallows this buncombe in toto, then wonders why the child insists on being so stubborn and persistently refuses vegetables, milk, in fact refuses anything and everything that the mother knows, and tries to make the child know, is good for him.

Let us now get the child's viewpoint. Every human being wants to be important and stand out prominently in the crowd. We all want to be noticed, all crave attention. In fact social and economic progress is based on the inherent desire of man to be somebody. Here, then, is a child who has enough intelligence to crave attention, and at the other end are the mother and father extremely anxious that Johnny grow up to be strong and sturdy and have red blood in him. Red blood, the boy is told, depends on iron, a mineral which is found in spinach. The child must therefore eat a lot of spinach. An argument ensues about the taste of this vegetable and if the elders use a good sales talk the boy may give in for a while, but spinach and the boy, you may be sure, will remain anything but friends. If the father or mother wins the first turn the other side, the child, will win at the next session. What is true of spinach is also true of other vegetables, then cereals, then milk, until, when the mother tells the story in the clinic or in the office, the child does not eat a thing unless forced to do so, which is after all, all that this child wants. He has learned to get his attention that way, and it is mighty difficult to change him now. The parents listen to more radio talks and read a few more articles on child nutrition and it seems that the greater the anxiety of the parents with regard to the child's not eating, the greater becomes the reluctance of the same child to partake of calories, proteins, carbohydrates, vitamines, and especially roughage.

Thus the erroneous information or the half-baked education that the modern parents receive in exchange for their patronage of the elaborate radio programs or their various organizations has tended to produce a negativistic child. A wise man once said that a little knowledge is worse than no knowledge at all, and he was certainly right when applied to the problem of child feeding.

There is yet another factor that we must consider in connection with the causes of malnutrition. The physiologist tells us that the secretions of the digestive juices are regulated by certain glands which in turn are affected by the various psychological and emotional states of the individual. The emotions affect the ingestion, the digestion, and assimilation of food. Picture the child who has a long list of do's and don't's to carry out at meal time. There is a certain class of parents, particularly in the middle classes in the upper economic scale who are always worried about their child's manners at the table. "Eat this with a fork," "Take smaller bites," "Sit up straight," "Say 'please'," "Don't Talk," "Don't say 'ain't'," and untold other commands at table tend to produce anything but a pleasant situation at mealtime.

The problem becomes peculiarly difficult if, as so frequently obtains, there is disharmony between the parents with regard to the propriety and advisability of these commands. The child, ever ready to take advantage of the situation, is sure to use his weapon when he realizes the injustice done him. He refuses to eat.

Another factor in the interference with proper nutrition in the child is tiredness. It should be remembered that the growing child at play usually works rather hard. This is particularly true of the child of school age. While it is true that work tends to produce a demand for additional food it also behooves us to know that a boy may play so hard as to become too tired and fatigued to be able or ambitions to partake of a full meal.

A practical point to consider in connection with proper nutrition of the child is brought out by Aldrich in his little book "Cultivating the Child's Appetite." This author contends that fats being slow in leaving the stomach interfere with the hunger impulse in the individual. If we remember that hunger pain is due to the contraction of the empty stomach, it is conceivable that the fattening process attempted on underweight and thin children may not only be unsuccessful if based on high calorie feeding, but it may indeed work the other way, that is, the child will eat less and therefore remain underweight under this regime. Personally, I do not find this factor a prominent feature in the condition described.

Last, but not by any means least, in the category of malnutrition we should consider the nervous child. A description of this type of child is beyond the scope of this paper. In fact we are all acquainted with him so thoroughly that he needs no description here. Whether nervousness is the cause, or the result of malnutrition is a speculative question. It may be either or both. The fact is that most nervous children are malnourished. They are frequently bright children subject to the slightest suggestion, with the various emotional outbursts, laugh and cry easily, have various means of showing their importance by tantrums of all sorts, with whims and moods galore, especially with regard to food. The parents plead and bribe, and urge them to eat, at times resorting to punishment in a half hearted way, with this result: The child when finally made to swallow his food, soon begins to gag and in the eyes of his excited and excitable audience simply vomits every mouthful he has taken on acquiescent terms. So goes the battle day in, day out, and at times these children get to the proverbial skin and bone variety.

I have not much to say about the child whose malnutrition is based on scanty food due to poverty. We are a wealthy nation, and with the various social agencies to care for those who lack food, malnutrition as it exists in some of the European countries is practically unknown here. We find a few cases in the clinics where sufficient food is not available. It is of interest to know that not one child in this group is reported as being finicky about his food. These children eat what they get and are at times thankful that they have something to put in their stomachs. I doubt very much whether a menu regardless of how rich in foodstuffs, would in any way interfere with their appetites. They like every article of food they get, when they get it.

DIAGNOSIS

Most writers agree that a child whose weight does not come within seven per cent of the required weight for height and age as given by the various tables should be considered malnourished. Personally, I do not believe that this rule holds true for all children. We frequently find youngsters who are perfectly well physically and mentally yet whose weight is ten per cent or even twelve per cent less than normal. While the height and weight charts are very valuable to us as guides on nutrition, other factors must be considered before a child is classes as malnourished. The standard should be respected but the general conditions of the individual must be given preference in the evaluation of the data obtained on careful study. This I find to be true: The great majority of children who show a ten per cent deviation from the standard also show other criteria which justifies a classification of malnutrition.

PROGNOSIS

Generally speaking the prognosis for the malnourished child is very favorable, if properly managed. Under proper care the child shows a prompt gain in weight and along with this there is distinct improvement in all other features which marked the child as malnourished.

TREATMENT

Here, as in all other branches of the practice of medicine, prevention is far easier than cure. It must be remembered that malnutrition, as such, is the direct result of an insufficient food assimilation. This insufficiency may be in quality, in quantity, or both, of the required needs. Thus it makes but a slight difference whether there is an abundance of carbohydrates, proteins, and fats with scarcity of vitamine content or mineral intake. On the other hand, the vegetable and therefore mineral ingestion may be ample, yet when there is an insufficiency of vitamin these substances can not be utilized by the organism. Thus it is of extreme importance to ascertain that there is ample supply of all of the food essentials in the dietary of the individual.

Furthermore, we know definitely that the habit patterns with regard to food as well as other activities begin in infancy and extend to the first five or six years of age, after which attempted change is extremely difficult. It becomes evident that the refusal of cereals, vegetables, and other foods introduced when the child is five or six months old, cannot be taken lightly if malnutrition in late childhood is to be averted. Not so much for nutritional value of these foods as for the habit training, is it important that the baby be made to realize that what is given him he must accept or go hungry.

As a prerequisite, it is necessary, of course, that the mother have sane views on the actual food needs of the child, particularly with regard to the various food she is advised to use. Vegetables, for instance, are a very important item in the menu of the baby because of the mineral contents. Yet it is a useless waste of energy on the part of the attendant and the child to fight over more than one or two teaspoonfuls of well prepared, concentrated fresh vegetable mash. Again, nothing will promote permanent aversion toward certain foods more effectively than a struggle between attendant and child. The introduction of small amounts of the new foods with gradual increase in the quantities of the given article will not only do away with dislikes for these foods, but rather will the child develop a taste for them. One must bear constantly in mind that explicit instructions to the mother on how to prepare these infant foods are as necessary as the very recommendation of the given food. The palatability of the dietary is a highly important factor in cultivating the child's appetite to these items.

We take it for granted, of course, that we are dealing with a normal baby. Too little attention is paid to the milder feeding disturbances of infancy. I firmly believe that there would be far less malnutrition in later childhood if physicians were to study carefully the feeding habits during the first two years of the child's life. To interdict a certain food on the mere ground that the baby does not like it or because it produced vomiting on one or two occasions is to invite finickiness later on. Every effort should be made to determine whether the food thus refused is actually doing physiologic harm. The treatment of the idiosyncrasies to the various foods is beyond the scope of this theme. It has been my observation that only on rare occasions is the spitting up of food due to anything but faulty feeding methods either in the preparation or in the administration of the menu.

I am also of the opinion that our present method of stereotyped feeding schedules for infants and children is not ideal as it started out to be. The three-hour or the four-hour schedule of infant feeding is sometimes taken too biblically, and I wonder how many bad feeding habits this routine system is creating. One wonders at times whether the grandmother is very far from right in advising her daughter to nurse the baby according to his needs rather than according to the hands of the clock. No two babies are alike. If we insist on being scientific, by what reasoning do we assume that the stomach of every infant empties itself in exactly the same time? I, for one, believe that we could do better by our little patients if we should individualize rather than generalize the feeding care that these folk require. I have seen fretful, colicky, crying babies on three and four hours schedules lose these annoying symptoms when under apologies I reduced the feeding schedule to two and one-half hours during the first three or even four months of life. I have similarly increased the feeding time to five and six hours with the same results.

TREATMENT OF ESTABLISHED CASE OF MALNUTRITION

A thorough physical examination is the prerequisite to the treatment of every case of malnutrition. This is important first because of the valuable findings that may be elicited which may interfere with the proper metabolism of the individual. Second, because a detailed examination will elicit confidence and cooperation both in the patient and his parents. The co-operation of parents and child is an absolute essential to successful treatment. Confidence in the physician is of utmost importance since most parents of malnourished children have been educated by radio and cooking school nutritionists previously. One of the tasks of the physician is to undo what those institutions have sold. Nothing gives more satisfaction to a parent than a thorough examination of their child.

Remediable defects should be corrected, bad tonsils, carious teeth, should receive prompt attention, as these conditions interfere directly with the intake and assimilation of food.

The height and weight ratio: Not a little confusion exists on the evaluation of the various height and weight tables used in the public schools as standards for the physical status of the child. While these standard figures are not ideal, one is seldom justified in condemning them as a valueless nuisance. It is true that faulty height and weight are only a part of the picture of malnourishment. Yet these features are very important indices of the child's general health.

To me it seems that physicians tend to ridicule and ignore these charts while parents always worry about the notes the children bring home from school, so many pounds underweight. One is not justified in entirely ignoring these figures since they do represent an average height and weight obtained from many thousands of normal children. It is remarkable to note the improvement in the child's general condition as the figures approach those of the standard for his age.

Numerous reports by reliable workers have shown that the weight charts are of definite value. We have proved it to our satisfaction that there is a definite relationship between the degree of malnutrition and backwardness in school. A tired child is usually also a restless child. He can not concentrate on his work and sooner or later becomes a problem in school as well as in the home. As his physical condition imroves his school work begins to show a corresponding improvement. Unconventional habits such as enuresis, fingernail biting, parvus nocturna, have also improved with the patient's increase in weight. Whether this mental improvement is due to a physiological improvement in the muscle tone or whether more attention is paid to mental as well as to physical hygiene is immaterial. The point is that there is manifest a definite improvement in all phases of the child's life.

Method: When the child first presents himself, a careful history is taken with particular regard to his early development, feeding disturbances, present food habits, emotional status, school status, and social habits. This is followed by a careful physical examination including the height and weight.

For all children who are seven per cent or more underweight the following orders are prescribed and transmitted to the parents in minutest details. In the clinic the nurse visits the home within a day or so to see that the orders are carried out. In private practice the parents are usually eager to co-operate and do so willingly.

Food: The child is to have three square meals a day.

8 a. m. The breakfast consists of raw or cooked fruit every morning, a cooked cereal, the latter where possible, to be cooked in milk and water 1:1 for ten minutes in the open flame and one to one-half hours in double boiler. Toast *ad lib,* bacon or an egg, milk. In connection with serving breakfast the mother is instructed to wake the child at 7:30, have him attend to his toilet and dress in such a time as would give him at least one-half hour to eat his breakfast before it is time to leave for school, and if he does not go to school he will have all the more time to play out doors in the fresh air and morning sunshine.

Noon Lunch: Bread and butter as much as the child wants, soup with plenty of vegetables. These three items should always be present. We do not tell the mother what to cook, nor do we advise any special foods. They are not necessary. I feel that, to a great extent, it is not so important what the child eats of the simple foods, as it is *how much* he eats. The energy quotient of a child is high. Undernourished children, especially, have an increased metabolic rate and need a lot of food. The dessert should be of the simplest kind, be easily digested, and have good food value. Bread pudding, rice pudding, tapioca, custard, are all economical foods, easily prepared, and usually relished.

3 p. m. A sandwich—ham, cheese, or jelly. Milk.

6 p. m. Dinner: Bread and butter, as much as the child desires. Leafy vegetable, the child should have a raw vegetable every day. Lettuce is the ideal vegetable not only because of its mineral content but also for its vitamines and bulk. Lettuce is best served crisp and cold. The rest of the meal is determined by the mother. Here again emphasis is placed on quantity rather than quality except for the above items.

Sweets: In connection with candy, ice cream, and pastries, it should not be forgotten that in spite of the cigarette manufacturers, these articles really make a good food, easy to take. In fact, it is not unusual for a mother to complain that much to her dismay those are the only foods that the child will take. The only objection that I can see to these foods is that they are usually abused. I advise frequently to use them as dessert, providing the child has eaten a good meal.

Milk: It is said that milk by virtue of its mineral and vitamine contents is an ideal food. That both minerals and vitamines are necessary for proper growth is well known to all. However, it should be remembered that raw milk is far from being the most digestible food. The large casein curd is rather difficult to digest. Also milk is poor in iron. Milk we also know causes distention from gas. The calcium is a valuable mineral but if we consider that the average child only needs 6 mg per pound per day we are forced to doubt the excellency of milk as a food for children. Yet to those who like it, it makes a good beverage, and as such it should be considered. I have seen children who take a whole quart a day or more and have all the signs of malnutrition. I know children who do not take more than a few sips a day and who are well nourished. Also, we see very frequently children who refuse milk and are underweight. Looking at it from a practical standpoint I do not believe that milk plays much of a part in nutrition of the child. I certainly do not see the justice in setting a goal for one quart a day per child, and in addition fight for it!

With regard to general directions for serving foods, we recommend this procedure:

1. No excitement immediately before or after the meal. The child must be rested before he sits down to the meal.
2. The meal should be well prepared, served with ease, in a proper setting. The table should be as attractive as is economically possible.
3. Put the food on the table without remarks as to its merits. The child knows that it is good for him, or you would not serve it.
4. Table conversation should always be of a quiet and pleasant nature.
5. If the child has to be discussed, steer the talk so as to emphasize his good qualities. Never allude to his short-comings.
6. Never say how little the child eats. Let him feel important by his good appetite rather than by poor food intake. Do not put a premium on his not eating. He'll try to be more important by eating larger quantities.
7. Never say that the child does not like a certain food. Whenever the occasion presents itself boast of his liking everything. He will usually live up to the reputation.
8. Do not argue about table etiquette during the meal. It is easier for a child to do as you DO than it is to do as you SAY.
9. If food is refused, take it off the table without any sign of concern about it. Do not show disappointment over it. It may happen again and again, but ultimately he will learn to take his food without a whimper.
10. Do not serve food between meals if the child has not partaken of a fair quantity of food at the table during the last meal time. Let him get hungry and he will enjoy eating at regular times.

Rest: Every child who is ten per cent or more underweight is required to lie down for at least one hour during the day. This is very important in the treatment of malnutrition. In fact, when a child returns within one or two weeks without having gained in weight, we usually get the story that he did not rest during the day. It is unusual for a child not to gain if directions are followed out. The most frequent cause for not gaining under these directions is the common cold.

Let it be remembered that a gain in weight in the child is not nearly as difficult to attain as it is in the adult. After all it is a simple matter. If the food taken in is in excess of that required for energy expenditure the remainder will be stored in the tissue and a gain in weight will result. There is no economic factor involved in prescribing limitation of activities of the child. Most children can rest one hour after school. It is remarkable to see what this one hour's rest can do to improve the child's general condition.

Food and rest are the most important factors in the treatment of malnutrition. The greater the degree of underweight the greater is the average gain in weight if directions are followed carefully. B. Y., gained four pounds in one week. C. S., a nine year old boy who was fourteen per cent underweight gained six pounds in two months. As the figures for weight approach normal, the gain is lessened, but these children always show some gain, as every child should. No child who is under-nourished should go to bed later than eight o'clock, preferably earlier.

Play: It is not natural for a child to sit idle. He is, and always should be, doing something. The malnourished child should spend as much of his time as the weather will allow out doors in play. It is not wise to limit the nature of his activities, because of fear of implanting a sense of invalidism. Rather should it be insisted on that he rest before he goes out to play, and also that he return in time to rest up before the meal.

Ultra-Violet: There is a small percentage of children who fail to gain in weight in spite of careful attention to the procedure outlined above. The ultra-violet ray has been reported of benefit in these cases. I have tried it in several cases both in office and clinic, and I must confess that I am not enthusiastic about its use. These children have had everything done from tonsillectomies to mastoidectomies with the same result: They will gain a pound one month and lose one and a half the next. They all suffer from repeated upper respiratory infections, one following in the wake of the other. I have also used yeast with no particular success in the stubborn cases.

Drugs: Drugs are of no great value in the treatment of malnutrition, with this exception. All malnourished children who come to us are anemic. They are anemic because of improper food intake whether qualitative or quantitative. Few of them eat vegetables, a fact which undoubtedly contributes greatly to their pale color. I frequently give iron not so much to combat the anemia, as because most mothers demand tonics. The more I give it the more I am satisfied that the mothers are right in demanding it. Nothing lends more encouragement to a doting mother than a pair of rosy cheeks in her child. It also gives the child a little confidence in himself and he is spurred to do better. I use iron more now than I did when I first started and I really have some confidence in it.

The only other drugs I use in this connection are the mild sedatives for the extremely nervous children. I am satisfied that the bromides or chloral hydrate are good old drugs which we do not use often enough when they are actually indicated. Personally I began to use them only two years ago after I had read Cameron's excellent book on "The Nervous Child." Symptomatic treatment here is just as important as it is in other branches of medicine. A nervous and restless child, who is constantly tortured by night mares, and who gets up in the morning even more tired than before he went to bed should receive at least as much relief as is accorded his adult nervous and hysterical friends.

CONCLUSION

It is said that approximately fifty per cent of the school children of the United States are malnourished. From the outline that I have just presented on the practical phase of this situation it seems that the physician who has children under his care can alleviate this condition by:

1. Educating the parents on proper essentials for child feeding.

2. Careful study of minor feeding disturbances in infancy with the view of averting improper food habits in later childhood.

3. Conscientious study of those children who are malnourished and issuing sound advice with reference to their management. The factors in treatment of established cases consist of:

a. Simple but wholesome foods served without sales talks unaccompanied by over-solicitude.

b. Ample rest.

c. Proper amount of play in fresh air.

d. Judicious treatment of symptomatic features accompanying malnutrition.

DISCUSSION

H. B. HAMILTON, M. D. (Omaha): The essayist has worked, talked, and done some writing on the subject. I got out of his paper there is one thing which must be done, and that is to make a diagnosis. They are not all from the same cause. It is necessary to give a thorough examination and find out what factors are causing malnutrition of the child. Dr. Jahr mentioned many factors which enter into the problem of the malournished child. It is not easy to define. Some are overweight. Our standards of weight to age and height are of value, but they do not constitute an accurate criterion of the child's nutrition. I am not sure mere pounds are necessarily the best criterion. I think the child's endurance is of more importance. We have no standard to measure it except comparison of children of the same age playing in the same group.

The matter of rest is an important thing. Children are over-active and are stimulated to excel in school activities. They take dancing and music—things all right in themselves, but if thrust on one child, the poor patient is overworked.

The definition of a good diet seems to be covered by having sufficient calories and something which is digestible and with sufficient variety, and with vitamins and minerals. A generalized diet allows the child to have a selection. I rarely pass out diet charts. I think I am better able to fit the needs of the individual child.

The matter of malnutrition cannot be done by radio talks or newspaper or magazine articles. What you need to do is to make of it an individual thing; to take the child to a doctor who gives a thorough examination and looks at the child from every standpoint, and then does what is necessary. The doctor must be informed as to what is having an influence on that malnutrition, and guide it from that standpoint.

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DATA FOR PRELIMINARY REPORT ON STUDY OF MATERNAL MORTALITY IN NEBRASKA IN 1927

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A study of all maternal deaths in Nebraska in the years 1927 and 1928 attributed to causes connected with pregnancy and childbirth was begun in December, 1927. This is being made through the cooperation of the Nebraska State Medical Association, the State Department of Public Welfare, and the United States Children's Bureau; the medical association requesting the study and assuring the cooperation of the physicians, the Department of Public Welfare (through the Bureau of Health) furnishing copies of the death and birth certificates, the Children's Bureau paying the salaries and travelling expenses of the physicians who gathered the material. These physicians, Dr. MaBelle True, then of Lincoln, and Dr. Herman M. Jahr, of Omaha, obtained case histories of the women who died. They ascertained the facts by means of personal interviews with the physicians who attended them. The hospitals also furnished data relating to their deaths. The Children's Bureau is tabulating the results. It is the individual physicians of the State, who have so generously given their time, effort and their confidence, who have furnished the material. This study is not yet completed. A number of case histories remain to be gathered. A few tabulations of the 1927 cases have been made and will be presented now in this preliminary report. The material for the two years, giving, as it will, a larger number of cases, can be analyzed in much greater detail, and will be later presented to the society.

TOTAL, URBAN AND RURAL RATES

In 1927 there were in Nebraska 165 deaths assigned by the Bureau of the Census to puerperal causes; that is, 165 deaths in which pregnancy or childbirth was the decisive factor. The rate per 10,000 live births was 59.2. This was seven points lower than the rate for 1926, which was 66.5, but slightly higher than that for 1925, which was 57.1.

Table I. Live Birth and Maternal Mortality, Nebraska, 1927

Area	Live Births	Women who died from causes connected with childbirth: Number	Women who died from causes connected with childbirth: Rate per 10,000 live births
Total	27,865	165	59.2
Urban	6,778	62	91.5
Rural	21,087	103	48.8

Of these 165 deaths, 62 were urban, 42 occurring in Omaha, and 20 in the other four cities listed by the Census as having 10,000 or more inhabitants, Lincoln, Grand Island, Hastings and North Platte, and 103 of the deaths occurred in the smaller towns and rural areas. The rates per 10,000 live births were 92 for the urban area, which includes all cities of less than 10,000. The higher mortality for cities is due in part to the deaths of non-residents in the cities. The 62 deaths from puerperal causes in cities of 10,000 and over include fifteen deaths of women who came from small towns and other States, all of them either after their delivery or abortion, or as emergency cases. If these deaths were not charged to Omaha and the larger cities, the urban rate would be materially reduced, but would still remain higher than the rural maternal mortality rate.

CAUSES OF DEATH

The distribution of these deaths by cause of death is shown in *Table II*. Of the 165 deaths, 70 were certified as due to puerperal septicemia, 33 to puerperal albuminuria and convulsions, 21 to puerperal hemorrhage, 14 to puerperal phlegmasia alba dolens, embolus, or sudden death; 13 to other accidents of labor, 13 to accidents of pregnancy, one to "following childbirth not otherwise defined." From the interviews with the physicians it was found that ten deaths would have been classed differently if the full facts of the case had been stated on the death certificate. Three of these deaths were found to be undoubtedly due to criminal abortions, which are classed by the Census Bureau with homicide, not with puerperal deaths. In four other cases it was found that the puerperal state was apparently not the decisive factor. However, this must not be thought of as reducing the true puerperal rate, as these cases are almost certainly balanced by others which are now incorrectly classed as non-puerperal because of omissions from the death certificates, omissions made either negligently, or, in some few cases purposely to protect the reputation of the patient. The deaths from sepsis will be discussed later in this report.

Table II, Cause of death as given on death certificate of women who died from causes connected with childbirth; maternal mortality, Nebraska, 1927

Cause of death as given on death certificate	Women who died from causes connected with childbirth: Number	Women who died from causes connected with childbirth: Rate per 10,000 live births
Total	165	59.0
Accidents of pregnancy	13	5.0
Puerperal hemorrhage	21	8.0
Other accidents of labor	13	5.0
Puerperal septicemia	70	25.0
Puerperal phlegmasia, alba dolens, embolus, sudden death	14	5.0
Puerperal albuminuria and convulsions	33	12.0
Following childbirth (not otherwise defined)	1	(1)

1. Not computed.

PARITY AND AGE GROUPS

Of the 165 women who died, 58 were primiparae and 101 were multiparae; of six the parity is not known. The maternal mortality rate per 10,000 live births was 71 for primiparae and 51 for multiparae. The rates for the different age groups are given in *Table III*. Except for a rate slightly higher in the 15 to 19 year group

Table III, Age distribution of women who died from causes connected with childbirth; maternal mortality, Nebraska, 1927

Age of mother	Women who died from causes connected with childbirth: Number	Women who died from causes connected with childbirth: Rate per 10,000 live births
Total	165	59.2
15-19 years	10	39.0
20-24 years	27	35.0
25-29 years	37	50.0
30-34 years	39	73.0
35-39 years	31	91.0
40 years and over	21	161.0

than in the next group (probably due to the predominance of primiparae in the former) the rate increases with the age of the mother.

CHARACTER OF ISSUE

A striking finding of this study is the fact that less than half of the pregnancies of these women who died were carried through to a successful conclusion as far as the baby was concerned. This is shown in *Table IV*.

Table IV, Character of issue of women who died from causes connected with childbirth; maternal mortality, Nebraska, 1927

Character of issue	Women who died from causes connected with childbirth		
	Total	Urban	Rural
Total	165	62	103
Live birth	74	23	51
Stillbirth	26	8	18
Abortion	46	24	22
Ectopic gestation	10	3	7
No issue	9	4	5

Of the 165 women who died, only 74, or 45 per cent gave birth to live babies. Of the remaining 91, 26 had stillbirths, 46 had abortions, 10 had ectopic gestations, and nine died undelivered. About half of the rural mothers and slightly more than one-third of the urban mothers, who died gave birth to living children. In spite of the much larger rural population, with its far greater number of both births and deaths, there were actually a larger number of deaths following abortions in the cities than in the country. In fact, the rate for deaths from abortions per 10,000 live births, is 10 for the rural area, and 35—more than three times as great—for the cities. It must be constantly borne in mind, however, that our series includes only those women who died. No deductions can be drawn from this about the relative proportions of live births, still births, abortions and ectopics among those women who did not die. There is no way of determining how many abortions occur for even if doctors reported all that occurred in their practices, there are probably many women who have abortions who do not consult a physician.

The 46 abortions in this series, 28 per cent of all deaths, consisted of 14 spontaneous, five therapeutic, 19 self-induced, and three criminal and five for which the cause could not be ascertained; 13.3 per cent of all the deaths ascribed to puerperal causes followed self-induced or criminal abortions. However, this does not include those criminal abortions which were frankly reported as such, on the death certificate, or which were concealed under some non-puerperal cause, such as appendicitis, or pneumonia.

An interesting feature is that of these 22 deaths following self-induced or criminal abortions, 19 were of married, and only three of single women. Only four of these deaths were of primiparae. Whether there were additional deaths among single women that were so disguised on the death certificates that they were not included in our study, is not known.

PRENATAL CARE

For the purposes of classification, the prenatal care that these patients received was divided into three grades; and certain groups of cases, the self-induced and criminal abortions and cases where pregnancy terminated before the third month, were excluded from those for which prenatal care was required. The phrase "Prenatal care inapplicable" will be used to describe this group. Of the 116 applicable cases on which there was a report on prenatal care, no prenatal care whatever had been given in 62 cases, or in 63 per cent. The others are classified as follows:

Grade I-a: Those who had prenatal care as described in Standards of Prenatal Care, Children's Bureau publication No. 153. This is the only grade that can be considered adequate. It may be summarized as follows: The physician at the first visit should take and record a careful history, medical, surgical, gynecological, and obstetrical. He should make a complete physical examination, including the examination of heart, lungs and abdomen; pelvic measurements, both internal and external; and the taking of blood for a Wassermann reaction. Minute instructions in the hygiene of pregnancy should be given. The patient should be examined by a physician at least once a month during the first six months, then oftener as indicated, preferably every week in the last four weeks. (For the purpose of this study the first visit was allowed to take place during the second month.) At each visit to the physician the patient's general condition must be investigated, blood pressure taken and recorded, urinalysis done, pulse and temperature recorded, and the weight of the patient taken if possible. Abdominal examination should be made at each visit and the height of the fundus determined at this examination.

Only four of the women who died had received prenatal care of this grade.

Grade 1-b: Those who had, first, a general physical examination, including examination of heart, lungs and abdomen; second, measurements external and internal, except in pregnancies terminating before the eighth month and for multiparae who have had a previous normal delivery; third, regular monthly visits to physician beginning with or before the fifth month, with examination of urine and blood pressure at each visit.

Sixteen women had prenatal care of this grade. These cases have been combined with the four of Grade 1-a to give 20 which is called Grade 1. This constitutes. only 17 per cent of all of those 116 for whom prenatal care was applicable and reported upon.

Grade II: Those that had, first, a general physical examination, including examination of heart, lungs and abdomen; and, second, regular monthly visits to physician beginning not later than the seventh month, with examination of urine and blood pressure at each visit. Twenty-one women, or 18 per cent of the cases under consideration, had prenatal care of this grade.

Grade III: Those who had some prenatal care, but not care meeting the requirements of Grade II. It may have consisted on only a single visit. Thirteen women, or 11 per cent of the cases under consideration had prenatal care of this grade.

The numbers of urban and rural mothers receiving the various grades of prenatal care are shown in *Table V*. It must be always kept in mind that these are only the mothers who died, and the care they had does not necessarily reflect the quality of prenatal care received by those who lived.

Table V, Grade of prenatal care received by mothers who died from causes connected with childbirth, maternal mortality, Nebraska, 1927

Grade of Prenatal Care	Women who died from causes connected with childbirth: Number	Per cent distribution
Total	165	
Prenatal care reported	116	100.0
Grade 1	20	17.2
a	4	3.4
b	16	13.8
Grade 2	21	18.1
Grade 3	13	11.2
None	62	53.4
Prenatal care not reported	15	
Inapplicable (1)	34	

1. Self-induced and criminal abortions and cases where pregnancy terminated before third month.

Of the 54 women reported as receiving prenatal care, 39 consulted their physician at some time during the first five months of pregnancy, therefore they apparently could have had Grade 1 prenatal care. Half of them, or 20 of the 39, received Grade I prenatal care. Of the other half, 13 were given Grade II care, and six had Grade III care.

Of those receiving prenatal care, all but two had blood pressure examinations. The Wassermann test was reported as given in ten cases, less than one-fifth of the cases in which there was some prenatal care reported. External pelvic measurements were reported as made in 27 cases, or one-half the cases where some prenatal care was reported as given, but in only 11 of these was it stated that internal measurements also were taken.

OBSTETRICAL OPERATIONS

The numbers of the various obstetrical operations which were performed on these women are given in *Table VI*. Some obstetrical operation was performed in 66 cases, or 40 per cent of the whole. Of the 58 primiparae, 30, about half, had some obstetrical operation; of the 107 multiparae or not reported, one-third had some obstetrical operation. Of the 66 having obstetrical operations, 33 had some prenatal care; of these 11 had Grade I, 15 had Grade II, and seven had Grade III. Twenty-four had no prenatal care, and in nine, the prenatal care was either not reported or inapplicable. Of the 44 patients having had either Cesarean Section, forceps delivery, podalic version, or embryotomy, only 26 were known to have had prenatal care. Of these six had Grade I, 13 had Grade II, and seven had Grade III. Fourteen of these were reported as having had external measurements taken, but only six of these were known to have had internal measurements taken also.

Table VI, Obstetrical operations performed on women who died from causes connected with childbirth; maternal mortality, Nebraska, 1927

Obstetrical operations	Women who died from causes connected with childbirth: Total	Primiparae	Multiparae	Not reported
Total	165	58	101	6
Obstetrical operations	66	30	36	..
Cesarean	15	11	4	..
Forceps (instrumental delivery)	11	6	5	..
Laparotomy for ectopic gestation	4	2	2	..
Manual removal of placenta	6	3	3	..
Mechanical dilatation of cervix	6	2	4	..
Podalic version (and extraction)	3	..	3	..
Therapeutic abortion	5	2	3	..
Forceps with—				
Mechanical dilatation	1	..	1	..
Version	3	1	2	..
Mechanical dilatation and version	9	2	7	..
Other combinations	3	1	2	..
No obstetrical operation	99	28	65	6

HOSPITALIZATION

Ninety-four of the 165 cases received care at some time during their illness. A large majority of the women who died in the larger cities received such care—55 out of the 62. Thirty-nine of the 103 rural or small city deaths were of women who had been at least part of the time in hospitals. However, only a little more than half of these 94 hospitalized cases were delivered in the hospital. These 49 cases classed as deliverd in hospitals include four laparotomies for ectopic gestation, five therapeutic abortions, and six cases who entered the hospitals after attempts had been made to deliver them at home. Half of the 49 cases delivered in hospitals were planned hospital deliveries. Thirty-eight of the women who died entered the hospital after their delivery or abortion, and seven women who received hospital care, including two with unoperated ectopics, died without issue. Other factors of interest in the consideration of these hospital deaths, such as the size and equipment of the hospitals and whether the patient had vaginal or other manipulation before entering the hospital, will be discussed in the final report. Unfortunately no data are available on what proportion of the total births occurred in hospitals, so that it will be impossible to work out death rates on hospital and non-hospital cases.

MEDICAL ATTENTION AT DEATH

Two of the women are known to have had no medical attention whatever: one, a coroner's case, was unlikely to have had any, and in eleven cases the physician first saw the patient when she was dying.

PUERPERAL SEPSIS

Probably the most salient fact in the analysis of the sepsis cases is that of the 64 deaths found due to sepsis after interviewing the physicians, 34—more than half—followed abortions; and 17 of these, or more than one-fourth of all the sepsis deaths. followed self-induced abortions. If the deaths following self-induced abortions were eliminated, the sepsis death rate would be reduced from 23 to 17 per 10,000 live births. These self-induced abortions were certainly at least potentially infected before a physician was consulted.

Of the 30 fatal sepsis cases that did not follow abortions, 12 had had some obstetrical operation, by which is meant an operation directed toward the delivery of the fetus. Others, however, had other operations.

The whole subject of intrauterine manipulation in relation to sepsis cases may be summarized as follows: Of the 64 sepsis deaths, 33 were reported as of cases who had some intrauterine manipulation other than vaginal examination. In 16 cases this occurred before the appearance of symptoms of sepsis, usually as an operation as a method of inducing abortion; in 15 cases the intrauterine manipulations (usually curettage or intrauterine douches) were done after sepsis had set in, in two cases they were done both before and after symptoms. For 23 of the sepsis cases no intra-uterine manipulation was reported.

Fourteen of the 64 women who died of sepsis were delivered in hospitals. For 11 of these the hospitalization was reported as planned, for three it was emergency hospitalization.

Of the 43 sepsis cases in which prenatal care could be considered demanded (i. e., excluding self-induced and criminal abortions and cases in which pregnancy terminated before the third month), five received Grade I prenatal care, six had Grade II, two had Grade III, 23 had none, and for seven there was no report.

With regard to technique at delivery most of the physicians attending those cases of sepsis following deliveries at seven months or later reported that they had at least attempted aseptic technique; all except one of those reporting on rubber gloves had worn them; the patient was scrubbed and an antiseptic used in all the cases attended by a physician on which there are data, and shaving was done in half the cases. In the 24 delivery cases followed by sepsis, where a physician was present, a report on vaginal examinations was made in 21 cases. In five cases no vaginal examinations; in six only one; in ten two or more.

CONCLUSIONS

1. Of the 165 maternal deaths in the state of Nebraska during 1927, 70 of this number were due to puerperal septicemia. This is 43% of the total. Such deaths could have been prevented, with the exception of the 13.3% which were due to self-induced abortions. 30.3% of these deaths may still be charged to the physicians.

2. Nine of these mothers died undelivered, and only 74 of these women gave birth to live babies.

3. Deaths from abortions are three times as great in the cities as in the rural district—there being 10 such deaths in the country and 35 in the city. Of the 22 deaths due to self-induced or criminal abortions, 19 of the women were married and 3 were single.

4. The lack of prenatal care is appalling. There were 62 mothers, or 53% of the women who died who had no prenatal care. In this day of enlightenment it is hard to conceive of such state of affairs. In only 11 instances in the 165 women who died were there internal pelvic measurements made. Forty per cent of these 165 women who died from disease incident to childbirth had some obstetrical operation performed. One-half

of the primipara and one-third of the multipara fall into this group.

5. Fifty-seven per cent or 94 cases had hospital care.

6. Nebraska is the first state for which such tabulations have been made. Nebraska's maternal mortality rate is less than that of the whole birth and death registration area for the United States.

CATARACTS*

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When I was assisting an oculist, who had been for years and still is a very successful cataract operator, a prominent oculist from Cincinnati paid him a visit. This oculist made a statement which impressed me greatly. He said that he was losing his interest in ophthalmology because practically everything was known about it and there was not, therefore, much opporunity for further study. I have never even approached the point where I could begin to reach such a conclusion.

The subject which I am presenting at this time is as old as ophthalmology but I have never been in a meeting where the subject of cataract was up for discussion that I did not leave feeling I had learned something.

It may not be amiss for me to describe the methods which I employ. First, if the physical examination reveals nothing to contra-indicate operation, good; but, if there is present some systemic trouble such as diabetes or chest complication which can be at least improved by delaying the operation, this is done. The condition of the nose and of the teeth is investigated and the question of lacrimal drainage and conjunctival condition is considered. (Other things being equal—the younger the patient the better the risk). Some operators prefer to clip the lashes and, no doubt, in cases of deep set eyes and unusual lash conditions, this is an advantage. It is seldom, however, that I have found it necessary.

If the conjunctiva appears clean I prefer to disturb it as little as possible with strong solutions. First a drop of 4% solution of cocaine is used in each eye. This is followed by a few drops of adrenalin and atropine. Next a few drops of 20% argyrol or 2% solution of mercurochrome is used in the conjunctival sac and this is flushed out with sterile water. The lids, the sides of the nose, the brows, and the area about the orbit are brushed with a cotton swab saturated with a 2% solution of mercurochrome. Following this the cocaine is instilled at few minute intervals until 6 to 8 drops are used. Of course, in case of lacrimal infection, some days are consumed in eliminating this condition as a complication. There was a time when I used silver nitrate preparatory to the cataract operation but I formed the impression that, following the operation, the resultant irritation provoked too much movement of the eye under the dressing. This resulted, in some cases, in the slipping of the iris into the wound, and, in other cases, the healed wound itself did not appear so good.

I think it wise, from the time the patient enters the operating room, in case he is not deaf, to visit with him while the eye is being prepared and to allay, as far as possible, any nervousness he may feel. In the greater number of my cases an assistant prepares the eye. To myself I have always delegated the care of the instruments. These I have sterilized in Doctor Black's solution which, I believe, he terms the 1-2-3 mixture. This is made of 1 part oil of cinnamon, 2 parts carbolic acid, and 3 parts oil of wintergreen. The delicate cataract instruments may be left in this solution indefinitely without damage. From this solution I take the instruments through sterile water and dry them carefully with gauze. For many years I used the speculum but, during the past ten or fifteen years, in most instances, the assistant has held the lids open with Fisher's hooks. As a fixation forceps I make use of Prince's instrument grasping, usually, the internal rectus tendon. I am always careful to secure a firm bite. With this there is occasionally a slight conjunctival hemorrhage but it has never proved of any consequence. I have always operated with my right hand, standing at the head of the patient while operating on the right eye, and at the right side of the patient when operating on the left eye. Practically all of my Graefe knives have been of Weiss make. During the war, for some reason, I could not get the Weiss knives sharpened as well as I could both before and after that time. I even had one point curl while passing the knife through the sclera. This, however, was not a Weiss knife. The size of my incision is influenced somewhat by the type of cataract, but it is usually about ½ the cornea and it is made upward, the patient being directed to turn the eye silghtly downward. I have found a great deal of difference between operating on prominent and deep set eyes. This, however, has not influenced the results. There has been, of course, some difficulty with senile patients, although, in no case have I been forced to give up the operation nor to sacrifice an eye because of it. I might say that, three or four years ago, I tried out the lens protein test in a series of thirty or thirty-five cases. I found only one or two that reacted strongly. This will be brought out later in mentioning one particular case.

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Over a period of two or three years, preparatory to the operation, I had the conjunctiva lightly swabbed and slides made for microscopic examination. When it seemed indicated I had cultures made. My conclusion, from experience, is that no great assistance is derived from this.

With the incision I have always endeavored to make a fair sized conjunctival flap. In the far greater number of cases I have employed an iridectomy, using an ordinary iris forceps and grasping the iris slightly back of the free margin and, after carefully withdrawing it from the wound, have excised it with De Wecker's scissors, cutting straight up or down. This gives the nicest iridectomy. For many years I used the cystatome but more recently I have employed the multiple tooth capsule forceps to remove the greater portion of the anterior capsule. This, successfully done, with the jaws of the forceps out to the free margin of the iris or even under it, has largely done away with the necessity of later needlings. It has been my experience that, in a few cases, the upper portion of the lens was not sufficiently freed from the capsule so that I was forced to supplement this with careful use of the cystatome. Formerly I made pressure at the lower margin or below the cornea with the back of a Daviel scoop. I have also employed a spatula against the back portion of the wound and, in more recent years, I have made use of Fisher's spatula. Instead of the scoop I have used a hook similar to the Smith hook. I have never employed irrigation in an anterior chamber but have carefully worked out as much of the cortical material as possible. I neglected to say that, having rapidly completed the scleral incision, I hesitate a few moments before finishing the conjunctival incision. It is my custom to open the upper part of the wound with a spatula and to put a drop of cocaine on the line of the incision so as to secure a better anesthesia of the iris. After waiting a few moments I tell the patient that he may feel it slightly but not enough to provoke pain and I then proceed with the iridectomy. Having completed the extraction, with a spatula I am careful to see that there is no inturning of the lips of the wound, that the iris margins are in place, and that no fragment of capsule is in the wound. I have had but little trouble with fragments of capsule being healed in the wound. It has always seemed to me that there was more danger of the iris and fragments of capsule becoming healed in the wound when the incision was made a little back of the sclero-corneal margin.

At the conclusion of the operation both eyes are closed and a small amount of bichlorid ointment is used along the marign of the lids. Gauze is placed next to the eyes and a dressing is built up with cotton. This is covered with another piece of gauze and a two inch bandage, placed about the head, holds the dressing in place. A card-board mask completes the procedure. The patient is then lifted from the operating table to the cart, taken to his room, put to bed, and asked to remain on his back as quietly as possible. When he becomes tired pillows are slipped along under the side of the operated eye. He is not permitted to raise up in bed until the following morning when the back rest is used.

I have employed the intra-capsular operation mostly by accident because I could never quite convince myself that the lower percentage of safety justified the percentage improvement in vision as the result of its employment.

During my assistantship and further study abroad I was privileged to see a number of operations before performing one myself. Schmidt Replier, in Gottingen, operated in the same manner as did my chief. Nothing special in his work attracted my attention. Professor Fuchs, whom I saw operate many times and for whom I frequently held the Sachs illuminator, impressed me as being a safe operator. I did, however, see him lose a good portion of the vitreous without removing the cataract in an uncomplicated case. The patient was a Bohemian woman who did not understand his language. I saw Louis Miller, in Fuchs' clinic, perform many cataract operations in most of which he made a downward incision. I never saw one of his cases go wrong on the operating table. De Wecker, of Paris, operated with his eye within a very few inches of his patient's eye. He appeared to have but the one functioning eye and this one was highly myopic. He was, however, very skillful. Landolt and Panus were both skillful operators. This was in the early aseptic period and, preparatory to operating, Landolt would stand around with his hands encased in sterile sacks.

The first corneal stitch that I ever heard of was being done by a young oculist in Paris. It was not my good fortune to see him work.

At one of the meetings of the American College of Surgeons in New York, after asking several New York oculists as to whether the intracapsular operation was being done, and receiving a negative reply, I dropped into a little homeopathic dispensary way down on the east side. There I saw Dr. Hallet do three beautiful intracapsular operations. I asked him to drop me a line as to the results. In about ten days he wrote me that all three had done well.

About the same time I saw Dr. Verhoff, of Boston, perform a number of intra-capsular operations all of which went beautifully. However, he pointed to one case, which he had operated the day before, in which the eye was pinched and a large amount of vitreous lost.

I have been impressed by the apparently careless methods employed by some of the most successful operators. While some operators do not observe the strictest aseptic precautions in the preparation of their hands, it has been my observation that the eye has been properly prepared and the points of the instruments used have not been contaminated.

A good many years ago Dr. Jackson stopped off in Des Moines. In conversation with him I discussed the possibility of the cataract being raised out of the eye rather than by the ordinary pressure method. I had heard of Dr. Hulen, of the Northwest, having suggested operating in this manner, and I had also seen a short reprint of some Argentine oculist having made use of this method. A few years later the Baraker instrument appeared in this country. After looking it over and considering the possibilities of complications arising from its use I decided not to employ it.

I have never been able to get away from the idea that, immediately following the operation, perfect quiet insures a larger percentage of good results. Some prefer to operate with the patient in bed so that he will not have to be moved. Reports appear occasionally of patients who, immediately following operation, have risen from bed, removed the bandages and gone home. And still they have had a good functional result. Such a course is, however, not to be recommended.

A couple of years ago I dropped in on my old chief and, after a few moments chat, he asked if I wished to see a cataract operation. I went with him to the operating room. There, with a nurse standing by but taking no part in the operation, he removed a cataract, bandaged the eye, and left the patient on the table for ten or fifteen minutes while we discussed different things in ophthalmology. Then he turned to the nurse and told her to take the patient to her room. The patient's feet were swung to the floor and, after she stood up, her hands were placed on the nurse's shoulders whereupon they lock-stepped down the hall to her private room. Such is his procedure after perhaps forty-five successful years' experience in cataract work.

While I have, at different times, considered corneal sutures, such as I saw employed at the Hotel Dieu, in Montreal, and the different suggested conjunctival flaps and bridges, I have never used them.

It was my good fortune to operate for perhaps fifteen years before losing an eye from infection. Then I operated in a neighboring town and left the patient in the care of the local physician. Some time later I asked him to send the patient to the hospital and I operated on the second eye. Everything went well for seven days when a close inspection of the wound showed there was no healing tendency. This was watched carefully for several days longer when a slight point suggested infection appearing along the line of incision. This eventually extended into the eye resulting in its loss. This is the only case of its kind that has ever come under my observation.

We occasionally hear some one speak of the photophobia which sometimes follows the removal of a cataract. About twenty years ago I permitted a patient to return home ten days after the operation. One of his neighbors happened to be in my office a few days later, and he said he had seen this chap coming down the road riding a horse. The sun was shining on the snow. His retina had been protected by the cataract for fifteen or twenty years. An irritated condition of the eye developed which continued for a few weeks but after that he had standard vision and lived for many years.

As to the time the patient should be kept in the hospital following operation, naturally it varies. Some operators, employing the conjunctival sutures, dismiss the patient within a few days. I can recall two of my patients who left the hospital to vote within four days, rather against my orders. Both had good resutls.

At times I have been surprised, in removing immature cataracts, to find the clear cortical material in the anterior chamber clouding up in a few days. Some of these cases have cleared up without the slightest inflammatory reaction, while others have caused a great deal of trouble and the results have been indifferent. I think of one case, returned after a year, in which it appeared that the entire posterior layer of cortex had not been absorbed. The next day, following a needling operation, vision in this eye was better than 16/24. There was no reaction and the secured vision continued good. The sticky type of cataract, which, too often, I have been able to detect only in the course of the operation, has caused considerable trouble. I recall one case where examination of the eye, at first glance, revealed no lacrimal complication. This was during the war and an assistant, who was not in the habit of preparing the eye for operation, did not catch it. I did an intra-capsular operation but infection set in and I lost the eye.

There is one case I operated about ten years since. This patient, a woman, was a diabetic, over sixty years of age. There was a lacrimal interference which was corrected by probing and irrigation over a period of a few weeks. A combined method was employed. There was nothing unusual in the operation. The patient left the hospital in about ten days, the eye looking well. She returned in three weeks with an iritis which later developed in the other eye. I never regarded this as a sympathtic trouble but rather as an iritis resulting from the diabetes. This latter condition was under treatment all the while before the operation, and during the time she was under my care. The free margin of the iris of the operated eye, when the inflammatory trouble had subsided, was drawn across the pupillary space so that no pupil resulted. About three years later, this woman having been practically blind during this period, I opened the eye, picked up a piece of iris in the pupillary space and removed it. Since then she has had about 16/39 vision. This permits her to go about and to take care of her household duties.

Several years ago I operated on the eye of a woman who had had a low grade of iritis over a period of years together with a complete posterior synechia with pupillary deposit. After opening the eye I succeeded in doing an iridectomy, loosened the iritic adhesions, and removed the opaque lens in the capsule. There was but slight reaction and the patient had about 16/24 vision. She has been able to read newspaper type easily.

Another case, similar to this, was that of a man who came up from Kansas City with an occluded pupil and a complete posterior synechia. I was able to operate in much the same way but I did not do an intra-capsular operation as in the previous case. This was followed by some reaction but the vision is comparatively good. The patient went home without having a lens fitted. He uses this eye, however, in driving his truck daily over the streets of Kansas City.

My experience in operating on diabetics has not been bad. I recall the case of a sea captain who had lost one leg because of diabetic gangrene. At the age of eighty-six he became blind. I removed one of his cataracts at this time and, a year later, removed the second. With the lens correction he had standard vision with each eye.

The oldest patient I ever operated was ninety-two. There was no mishap and the wound healed kindly. I did not have the opportunity to make a careful refraction correction. This patient, however, saw enough to get about and lived nearly a year following the operation.

One condition I did not mention was that of milky secretion from the meibomian glands which I endeavored to correct over a period of weeks preparatory to operation. The operation itself was smooth in every detail. The afternoon of the day on which the operation was performed the patient's daughter-in-law called me. She said her father was moving around a great deal and insisting on having more food than the hospital supplied. He developed an infection which resulted in the loss of his eye.

The temperament of the patient should, many times, influence our decision as to the time of the operation. I recall one case. The orderly, after going to the patient's room to get her, returned to the operating room alone. He reported the patient to be in a highly nervous condition. I went to her room and saw for myself how excited she was. I immediately told her that she need not worry, that there was no necessity for operating at that time, and that we could and would postpone it until she was ready. She went home. Perhaps a year later she sent word that she would like to have me come there and operate. I did this and she had almost standard vision. At the time of the operation, while still a little nervous, her condition was not at all serious.

It occasionally happens that, after a highly satisfactory extraction, a great disappointment ensues when the refraction is done. Recently I had such an experience. The best vision I could secure was about 16/80. With the ophthalmoscope nothing could be detected to account for the poor vision. The central field tracing showed a large blind spot. Searching investigation did not reveal the cause. It was evidently post-bulbar. Fortunately, after several months, the blind spot disappeared and the vision, with the refraction correction, approaches normal.

Along with this case I might mention two cases of congenital cataract in children. In both cases the eyes were apparently equal in vision. After operating on one eye, to my dismay, I found it to be practically amblyopic. Operation on the second eye, however, was followed by good vision and gratifying results.

I have had my experience in operating on the second eye after the first eye had been lost by another operator. Recently I had one of these cases. The subject was tuberculous. He had a mouth full of infection about a few remaining teeth. He was very deaf and his tissues were very sclerotic. The operation was, however, uneventful except that it required some time to take up the remnant of cortical material. The vision was good.

I have had some interesting experiences in operating for cataract, when the suspensory ligament was torn as a result of trauma at some previous time. One of the saddest cases I ever had was that of a man about fifty years of age, who had but one eye. This one was highly myopic with a cataractous lens. He was absolutely deaf. I stated previously that I had never lost an eye on the table nor had quit without extracting the cataract. I was wrong. This is the one exception. The moment the incision was made, without apparent cause, a considerable amount of fluid vitreous escaped. There had been no tear of the suspensory ligaments in the course of the operation. So, rather than remove the lens with a spoon, I closed the eye. But I had not given my patient sight.

Needless to say, one reporting his experiences should state the plain truth. We have yet to see the man with 100% successes in any operation. In watching, recently, an operator perform two cataract operations, in an eastern city, I am sure this was not done. This oculist announced that he would perform two intra-capsular operations. In the first, he left a considerable portion of the capsule. In the second, vitreous was lost. When asked about it, by one of those present, he declared that no vitreous had been lost.

I mentioned, above, my experience with Verhoff's lens protein. I carried my tests through over thirty cataract cases. In only one was there a marked skin reaction. Operation was delayed several months in an effort to overcome this. When finally I operated, with the removal of the anterior capsule with forceps, a good portion of the bulk of the lens escaped as a watery fluid into the anterior chamber. A small nucleus was removed with a great deal of difficulty. The eye healed kindly but, for some reason which I cannot explain, vision was never but slightly better than 20/24. I asked this gentleman to see two of the outstanding oculists in this country. One of them wrote me that there was an optic neuritis, and the other wrote that there was probably a low grade infection. I could never demonstrate, to my own satisfaction, that either was present. There developed a kerato-malacia of unusual type after about two years. During that time the cornea was clear. The tension increased and the vision failed.

Mention was made, above, of good results following neglect of care immediately after extraction. In the ophthalmological section of the A. M. A., in Minneapolis, several unusual experiences were reported. I have had mine. One of the most striking, as I recall it, was that of a colored man. He was a giant of a fellow, about 6 ft. 3 in. in height. The evening following the cataract extraction he was found standing up in his bed. The eye dressings were disturbed but the results, as to vision, were good.

Last December I removed a cataract for a man who was about sixty years of age. I delayed operation several weeks in order to prepare him for it. For years he had suffered with arthritis. The characteristic deformity of the hands is extreme. In addition to this he coughed a great deal because of a chronic bronchial condition. There was nothing unusual in the operation. The eye, as it was dressed each day, was fine up to the seventh day when it was somewhat congested. And the aqueous in the anterior chamber was found to be quite clouded. The tension of this eye was never above twelve either before or following the operation. Apparently the pain was slight for the patient's sleep was uninterrupted. This condition continued about a week following which it cleared. Today the patient has almost standard vision with the proper lens correction.

In conclusion I must confess that this rambling account of my experiences reminds me of something an internist told me one morning when I met him in the hospital. I inquired as to the condition of a well known citizen. The internist said he had just left him. On entering his room he had asked the patient how he felt. "Fairly well," was the answer. He then asked how the patient had put in the night. "Well", came the reply, "I did not sleep much. The first hour I thought of all the good things I had ever done in my life. The rest of the time I thought of all the bad ones and, I am not through yet."

STUDIES IN EARLY ASYMPTOMATIC NEUROSYPHILIS*

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In the recent history of clinical medicine no more remarkable revolution of ideas has taken place than in the case of the relationship of syphilis to the nervous system. John Hunter taught in 1790 that syphilis never affected the internal organs, and attributed the paralyses which occasionally followed syphilis to the mercurial treatment.

The first important abnormal findings in the spinal fluid were made by Widal, Sicard and Ravaut(1) in 1901. They reported a hyperlymphocytoses in 90% of their cases of tabes and paresis. Nageotte, at the same time, also reported similar findings. Their observations were confirmed two years later by Schonborn(2). In 1903 Ravaut(3) reported a series of 138 cases of secondary syphilis without obvious central nervous system involvement in which he found pleocytosis in 42 percent. He also mentions a few cases of primary syphilis in which he found an increased cell count. A suggestion by Widal, Sicard and Ravaut that an increase in the albumin content of the spinal fluid was of significance was further investigated by Guillian and Paraut(4), who in 1903 succeeded in the separation of the globulin from the albumin content by means of magnesium sulphate. The pathologic significance of pleocytosis with increased amounts of globulin and albumin in the spinal fluid in cases of neuro-syphilis was thus established.

Plaut, in 1908, first performed spinal fluid Wasserman reactions. Lange(5), in 1912, described his gold chloride test. This marks the last departure in spinal fluid examination. Since that time we have acquired no new tests that add to our theoretical knowledge. Many modifications of each test have been introduced since that time but no new idea of theoretical importance has come out of these various modifications or additional tests.

In 1906 Hoffman(6) produced experimental syphilis in monkeys with spinal fluid obtained from a case of early syphilis, thus showing that spirochetes entered the cerebrospinal fluid in the early stages of the disease. The finding of spirochetes in the spinal fluid has had no practical application as a laboratory procedure.

In 1915 Wile and Stokes(7) discussed at length the presence of abnormal cerebrospinal fluid findings in the primary and secondary stages of syphilis. An interesting report by Cornaz(8) in 1918 showed that pleocytosis was found in 35 percent of the cases of early syphilis, before the appearance of cutaneous and mucous membrane lesions. In 1919 Nicolau(9) reported a series of 51 cases of primary syphilis prior to the appearance of secondary manifestations. Eighteen of these cases showed a definite increase of lymphocytes in the spinal fluid. Similar results, with some variation in percentage of cases showing pleocytosis, have since been reported by Klauder(10), McIver(11), Scott and Pearson(12) and Larkin and Cornwall(13). These observations are of great importance in indicating the frequency with which the central nervous system is involved in the early stages of syphilis. Moore(14) states: "The percentage of patients thus found to have early fluid abnormalities approximates the incidence of late clinical neurosyphilis, which makes it probable that when central nervous system invasion does take place it practically always occurs during the first month of the infection rather than at some later period." Wile and Marshall(15) in a study of spinal fluid in 1869 cases in all stages of the disease concluded: "Invasion of the central nervous system occurs extremely early in the disease. If the nervous system is found to be uninvolved by spinal fluid studies during the first months of the infection it is seldom invaded later." These important facts mean that an early examination of the spinal fluid is indicated in every syphilitic. Early spinal fluid examination means early diagnosis of neurosyphilis during the asymptomatic stage and makes possible the prevention of the serious late manifestations. It is undoubtedly true that the majority of cases of neurosyphilis in which the symptoms occur five to twenty-five years after infection woud have shown pathologic changes in the spinal fluid during practically the entire course of the infection. The constituents of the fluid in the early stages are varied, depending upon the type of involvement. Usually, the findings in general are of a mild nature. Occasionally a stronger positive Wassermann reaction is present early in the absence of other pathologic findings, at times showing a typically paretic fluid.

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*From the Venereal Disease and Neurologic Clinics of the Out Patient Department of The University of Nebraska College of Medicine.

During the past four years neurologic and spinal fluid examinations have been done on all syphilitic patients in the out patient department of the University of Nebraska College of Medicine. Unfortunately for study purposes, the cerebrospinal fluid examinations have been done at any convenient time during the treatment, and only in a very few cases before beginning treatment. Consequently, our collection of early cases is relatively small.

TABLE 1

PATIENT	AGE	DURATION TREATMENT	APPEAR. CHANCRE	SECONDARY SYMPTOMS	BLOOD WASS.	SP. FL. WASS.	LANGE	CELLS	CLINICAL
29862 F.	24	4 mon.	4 mon. ago	neg.	neg.	.1+.2+.4+.8+	122110000	44	neg.
33243 M.	23	1 mon.	5 mon. ago	?	2+	.1+.2+.4+.8+	5554332210		neg.
28111 F.	24	9 mon.	9 mon. ago	neg.	neg.	.1—.2—.4—.8+	1111000000	18	neg.
35576 M.	20	1 mon.	1 mon. ago	?	neg.	1—.2—.4+.8+	4432100000	5	neg.
33816 M.	21	1 mon.	1 yr. ago	pos.	neg.	1+.2+.4+.8+	1233330000	5	neg.
38409 M.	28	2 mon.	2 mon. ago	pos.	4+	.1+.2+.4+.8+	1111000000		neg.
39001 M.	23	1 yr.	1 yr. ago	pos.	3+	.1+.2+.4+.8+	3433200000	4	pos.
41725 F.	22	5 mon.	6 mon. ago	neg.	neg.	.1—.2+.4+.8+	0000000000	15	neg.
35162 F.	26	9 mon.	1 yr. ago	pos.	neg.	.1+.2+.4+.8+	1232000000	4	neg.

Note: The blood was positive in only three out of the nine cases.

In 416 patients routine spinal fluid examinations have been done one or more times. Fifty-seven of these were cases in which the examination was made during the first year of infection. A definite pleocytosis was observed in 10 cases or 17.6 percent; the Wasserman test was positive in 9 cases or 15.9 percent. There were 18 or 31 percent in all that showed cerebrospinal involvement. These were all asymptomatic except two cases that showed positive clinical symptoms of central nervous system involvement. One patient had a negative spinal fluid Wasserman, but a pleocytosis of 35 cells. The other patient had a 4 plus Wassermann and a Lange gold curve 3433200000. The chancre had been contracted nine weeks previous to the cerebrospinal fluid examination in the first patient and one year previous in the second patient.

TABLE 2

PATIENT	AGE	DURATION TREATMENT	APPEAR. CHANCRE	SECONDARY SYMPTOMS	BLOOD WASS.	SP. FL. WASS.	LANGE	CELLS	PROTEIN
29902 F.	25	none	Chan. Pres.	neg.	neg.	neg.	2110000000	56	.007
34426 M.	22	1 yr.	1 yr. ago	neg.	4+	neg.	1100000000	50	.032
30011 M.	26	9 mon.	11 mon. ago	neg.	neg.	neg.	1221100000	15	.028
35508 M.	26	1 mon.	1 mon. ago	pos.	1+	neg.	1111000000	35	.044
34608 M.	49	5 mon.	6 mon. ago	pos.	neg.	neg.	1122210000	15	.012
25332 F.	27	1 yr.	1 yr. ago	?	neg.	neg.	1111000000	52	.065
37878 F.	23	1 mon.	3 mon. ago	neg.	3+	neg.	2333211000	45	.016
42059 M.	28	6 mon.	6 mon. ago	neg.	neg.	neg.	1110000000	20	.048
40180 F.	19	10 mon.	10 mon. ago	neg.	neg.	neg.	2224000000	2	.036

NOTE: Protein .02 (20 mgm. per 100 cc) or above is pathologic.

A summary of the findings in those cases showing a positive spinal fluid Wasserman will be found in the accompanying table.

For practical purposes, it has been generally accepted that a positive Wasserman reaction in the cerebrospinal fluid represents a spirochetal lesion within the central nervous system. The variation in strength of the spinal fluid Wasserman reaction is a phenomena which has caused much speculation. It is well known that a strongly positive spinal fluid Wasserman means a potential case of paresis, and these strong positive cases are much more resistant to treatment than those giving a weaker reaction. This is only a generalization which has many exceptions for at times one finds a strongly positive spinal fluid Wasserman becoming negative with a relatively small amount of treatment. Particularly is this found to be true in the early asymptomatic neurosyphilis and in certain acute cases of cerebrospinal syphilis, as well as in some late cases of meningo-vascular syphilis. Yet, there are many cases of tabes in which the Wasserman reaction is weakly positive in which much treatment does not alter the reaction. The phenomenon of a negative spinal fluid Wasserman in active neurosyphilis with some or all of the other tests positive has been observed in all types of neurosyphilis with the exception of general paresis. No definite explanation for this phenomenon has ever been made.

The question of the presence of an early pleocytosis and increased protein content in the spinal fluid has been subject to much discussion. Of our 57 patients examined within one year after the chancre 9 or 15.8 percent showed pathologic spinal fluid findings but not a positive Wasserman reaction. These findings of definite pleocytosis, protein excess or Lange gold change are indicative of early cerebrospinal syphilis. These cases were all under active treatment. Table 2 illustrates the pathologic findings in these 9 cases.

In only two cases of this group have clinical symptoms suggestive of nervous involvement developed. Case 29902 that was examined during the primary stage, one year later developed headaches, amblyopia, increased irritability in spite of vigorous treatment. Unfortunately the patient left the dispensary without any further check of the spinal fluid. Case 35508 had developed subjective paresthesias and amblyopia about 6 months after the chancre without objective signs that were suggestive of early neurosyphilis.

It is an established fact that a pleocytosis in the spinal fluid is indicative of an inflammatory lesion of the brain, spinal cord or meninges. The origin of these cells, while not definitely known, is thought for the most part to be from the meninges, although it is perfectly possible that some cells from the perivascular infiltration of the parenchymatous tissue are also poured into the cerebrospinal fluid an make their way to the lumbar sac. However the majority of cells recovered at lumbar puncture have undoubtedly originated from the spinal meninges. Experimental work by Young and Alpers(16) seems to have fairly well established this fact.

Acute meningeal reactions, particularly those affecting the spinal meninges, will give a high cell count, sometimes one or two thousand cells per cubic millimeter, but when dealing with counts below 100, it is the belief of Young and Alpers that no such conclusions are justified. There have been cases of paresis reported which, during life, showed a normal cell count and at autopsy a fair amount of cerebral meningitis; on the other hand there are also cases on record which during life showed a cell count considerably above normal and at autopsy a very mild meningitis. Therefore, it has been emphasized by many observers that in dealing with cell counts below 100 per cm. it is not justifiable to draw clear cut conclusions as to the existence or non-existence of a relatively marked chronic meningitis.

The question of how soon after infection by syphilis lymphocytosis appears in the cerebrospinal fluid is one that cannot be definitely answered. Ravaut(17) has reported its presence two months after infection, and Fildes cites a case in which he found a positive fluid Wassermann 100 cells per cm and one spirochete in the fluid five months after infection without any symptoms of neurosyphilis. Cornaz(18) reports a series of 76 cases of primary syphilis with no secondary manifestations. In 24 of these the blood Wassermann was still negative, and pleocytosis observed in only 2 cases. Of the 52 punctures made when the blood Wassermann was already positive, 35 percent showed an increased cell count. Cornaz also reports 84 cases of roseola both with and without persistence of chancre. The blood Wassermann was positive in every case and lymphocytosis increased in 40 percent of the cases. These observations fully confirmed the earlier work by Dind, of the relative frequency and early extension of the infection into the meninges, since in 35 percent of the cases in the chancre stage the number of leucocytes was already increased at a time when the secondary manifestations were still absent. It is probable that pleocytosis is the reaction to spirochete invasion of the meninges and this occurs during the early blood dissemination of the spirochetes from the chancre. Pleocytosis is therefore the first indication of neurosyphilis.

The value of the colloidal gold test in the diagnosis of early cases of neurosyphilis is probably more limited than the preceding ones. The reason for the reaction obtained with the spinal fluid is not definitely known. The most plausible theory is that the reaction depends upon the ratio between the globulin and total protein present. Solomon(19) held that the variation between the paretic and non-paretic curves is one of degree and not of kind, that it is quantitative rather than qualitative. The statement is based on experimental work with fluids in various dilutions, and appears rather conclusive. Thus, it follows in line with what has already been seen to be the case in regard to the strength of the Wassermann test. Occasionally a true, so-called paretic curve may be observed in early cases of syphilis. Among our 57 cases of early syphilis one case showed a definite paretic curve, six cases a modified curve in this zone and one a strong reaction in the luetic zone.

Thompson(20) concludes after studying eight thousand cerebrospinal fluids that, while the vast majority of cases of paresis give a paretic curve, the presence of this curve was also observed in almost 50 percent of cases of cerebrospinal syphilis as well as in many cases of early neurosyphilis. Therefore, he feels that such curves do not differentiate cerebrospinal syphilis from paresis, nor do they differentiate syphilitic involvement from multiple sclerosis, brain tumor, etc.

However, an early slight disturbance of the

Lange curve in the presence of a pleocytosis and perhaps also increased protein content of the cerebrospinal fluid, constitute the early findings in syphilitic involvement of the central nervous system. If the colloidal gold test is an indication to the degree of involvement of the nervous system, then it seems that it should be of primary importance especially as a guide to the choice of treatment.

What has been said in regard to the previous two tests holds true also for the protein content of the cerebrospinal fluid; that is, that an increase of protein by no means diagnostic of syphilis of the central nervous system, as an increase usually occurs in most organic nervous diseases. The degree of increase of the protein content is indicative of the severity of the disorder and acuteness of the process within the central nervous system. Total protein estimations are a valuable guide in progress with treatment(21). In the presence of a pleocytosis in the early cases of neurosyphilis, the protein content is usually increased. In the great majority of cases, however, the increase of protein content occurs after the appearance of pleocytosis in the cerebrospinal fluid. In our series the protein content was increased in 6 cases; unfortunately, total protein examinations were not run in all of our cases.

As a brief resume of the last three tests, it may be said that an early pleocytosis should place one on guard and indicate the need of intensive treatment, with additional spinal fluid examinations at not too infrequent intervals. Criminal negligence is a term which is often used in medical literature in referring to the numerous cases of syphilis discharged from clinics and private physicians every day as cured, on the strength of absence of symptoms and one or more negative blood Wassermanns. Too frequently we find at the dispensary well advanced cases of neurosyphilis presenting a history of "cure" some five, ten or fifteen years ago. A case of syphilis should never be discharged without an examination of the spinal fluid to determine the presence or absence of nervous system involvement. Undoubtedly, fewer cases of neurosyphilis would exist if this rule was strictly adhered to, and fewer yet if a spinal puncture was done as a matter of routine at the beginning of, or following, the first course of intravenous treatment. If a physician realizes his responsibility he will always advise the syphilitic of the importance of early spinal fluid examination. By so doing, he has discharged his duty, and if later he is confronted with grave neurosyphilis, he need not feel responsible for the development. An early pleocytosis, a slight change in the Lange curve and an increase of the protein content of the cerebrospinal fluid are strongly suggestive of syphilitic involvement of the central nervous system. These three abnormal findings are comparatively easily brought to normal under early and persistent treatment. In the positive cases spinal fluid examinations should be done at certain intervals throughout the treatment and before discharge.

Another indication for examination of the cerebrospinal fluid should be a so-called Wassermann fast blood in systemic syphilis. Nearly always this means some deep seated systemic involvement of the disease and calls for a careful analysis, not only of the nervous system but also of the cardio-vascular, osseous, gastro-intestinal and other systems to determine the one involved.

Just why the nervous system or any other system should be selected by the spirochete after blood stream involvement has not been definitely determined. One theory holds that it is a matter of individual organ resistance to the spirochete. Another that there are different strains of spirochetes with affinity for certain organs. Cases have been recorded in which one syphilitic has infected four or five, all of whom have developed paresis and others have been recorded in which one syphilitic has infected individuals that all developed tabes. Another instance has been quoted by Hunt(22) in which nine patients were infected from the same source, all developing neurosyphilis. The Negro, when infected, tends to become cardiovascular syphilitic(23), while the white man, with his more highly organized nervous system, tends to become a neurosyphilitic.

Of the subjective symptoms suggestive of nervous involvement during the primary and secondary stages, the occipital headache radiating to the top of the head is perhaps the most constant one. This headache is usually worse at night and is probably due to meningeal irritation. Irritability, mental fatigue and loss of weight are frequent prodromal symptoms of neurosyphilis which may appear at an early period. Acute general pains of varying severity and without demonstrable cause are often observed. These pains, when localized, may closely simulate those of other diseases and many cases are on record where unnecessary abdominal surgery has been resorted to(24).

Bluemel(25) reports a series of 100 cases of neurosyphilis at a stage of the disease when their symptoms first become apparent. Twenty-two of these cases gave their principal complaint as being weakness and pains of the legs; eighteen complained of various strokes and spells; thirteen of numbness and tingling; twelve showed various types and degrees of mental symptoms; nine, eye symptoms such as blurring and diplopia; eight, abdominal symptoms such as nausea, vomiting and various types of abdominal pains simulating gallbladder disease, appendicitis and renal colic; seven, cranial nerve symptoms with the V, VII, and VIII cranial nerves most commonly involved; three epilepsy; three bladder disturbances and two general asthenia. A great percentage of these cases in addition to the above mentioned symptoms, also complained of headache. Attention should be called to the fact that the symptom complex in some of these early cases frequently are neurasthenoid. Perhaps the patient has at some previous time been treated for syphilis and presents a negative blood Wassermann. He becomes known as a case of chronic neurasthenia and perhaps after drifting from one medical office or clinic to another he falls into the cultist's hands. Careful neurologic, and if indicated, spinal fluid examination in the so-called neurasthenic, will result in fewer fully developed cases of neurosyphilis.

In this connection it should, however, be emphasized that lumbar punctures should not be made without a preliminary eye ground examination. The presence of a choked disc contra-indicates spinal puncture until careful observation has ruled out brain neoplasm.

A great deal has been written on the effect of treatment on the early signs of neurosyphilis and in a general way the agreement is that the serology approaches a negative condition more or less coincidentally with the clinical improvement. It is a well recognized fact that the signs of meningo-vascular syphilis are the most easily affected by treatment, and that cases of paresis are the most ressitant. The tabetic cases are somewhere midway between the two. Since many cases of meningo vascular syphilis and tabes give relatively mild spinal fluid reactions, compared with those in cases of paresis, it, therefore, follows that the weaker spinal fluids are more readily returned to normal than are the stronger. Not infrequently, however, especially in the early cases of syphilis a strong so-called paretic formula may be returned to normal with a relatively small amount of intravenous arsphenamine, whereas cases of meningo-vascular syphilis with much weaker fluids, usually long standing cases, have been recorded that were absolutely resistant to intravenous therapy, and in some instances also resistant to subarachnoid therapy. Malarial inoculation is indicated in these resistant cases.

In general, there is some uniformity of opinion that the cell count is the test most easily brought to normal by treatment. This has repeatedly been observed especially in cases that have received treatment with tryparsamide. There appears to be no agreements as to the rapidity of return to normal of the Wassermann, gold solution, protein or globulin tests. It is our observation that the protein content returns to normal following a normal cell count. Cases are recorded in which every test except the Wassermann returned to normal and others in which the Wassermann was the first test to become normal, all the others remaining positive; and likewise with each one of the other tests. It appears, therefore, that no definite formula can be set down by which the various tests respond to treatment with the possible exception of an early reduction in cell count and protein content.

In a general way, symptomatic improvement closely parallels the changes in serology. In cases of long standing infection, treatment has much less effect both in regard to serology and subjective symptoms, while the comparatively recent cases respond much more favorably.

In reviewing late medical literature on the subject of neurosyphilis one is impressed with the constant plea for an early diagnosis and a suggestion if not a demand that a spinal fluid examination be done on every case of syphilis. These pleas, suggestions and demands are based on investigations of thousands of cases of syphilis in all stages of the disease, by authorities both in the field of experimental investigation as well as clinical observation. When one then, with this abundance of statistics fresh in mind, reviews some 400 cases of syphilis in all stages of the disease, and finds one-third of the patients in the first year of the disease showing pathologic spinal fluids, the importance of such early diagnosis and such routine fluid examination is obvious. An early diagnosis leads to early treatment before sufficient damage has been done to the parenchymal tissues of the central nervous system as to render them irreparable.

SUMMARY

Out of 416 cases of systemic syphilis under routine clinic treatment cerebrospinal fluid studies have been done during some stage of treatment. In 57 cases fluids were examined within one year after the initial lesion.

Eighteen, or 31 per cent of these 57 cases, had positive serologic findings with a cellular increase suggestive of early neurosyphilitic involvement. All but one case were asymptomatic. Increased cell count is the most constant early sign of neurosyphilis. Protein excess is next in importance. Later the colloidal gold and Wassermann reactions are positive.

If a patient is to become neurosyphilitic the invasion of the cerebrospinal system by the spirochete occurs in the blood stream stage. If he escapes the secondary stage without cerebrospinal involvement it is unlikely that he will succumb to neurosyphilis.

The outstanding lesson is early spinal fluid examination to prevent serious late neurosyphilis. Early asymptomatic neurosyphilis usually responds well to treatment.

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DIAGNOSIS AND TREATMENT OF MANIC-DEPRESSIVE PSYCHOSIS*

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This form of mental disease is one of the most important, if not the most important, of any of the psychoses. It comprises from 12 to 20% of admissions to state hospitals. The following is Kraepelin's definition of this class and I worship him when it comes to classifying and describing the insanities.

"Manic-Depressive insanity is characterized by the recurrence of groups of mental symptoms throughout the life of the individual, not leading to mental deterioration. These groups of symptoms are sufficiently well defined to be termed the manic, the depressive, and the mixed phases of the disease. The chief symptoms usually appearing in the manic phase are: psychomotor excitement with pressure of activity, flight of ideas, distractibility, and happy though unstable emotional attitude. In the depressive phase we expect to find psychomotor retardation, absence of spontaneous activity, dearth of ideas, and depressed emotional attitude; while the symptoms of the mixed phase consist of various combinations of the symptoms characteristic of both the manic and depressive phases."

Women predominate three to one, as my experience goes. Bad heredity occurs in 70 to 80% of cases. First attack may come from 10 to 70 years of age. It may be with the first menstruation, or with first and subsequent childbirths. But the attacks do not stop at the climacteric. Three-fourths of the cases have their first attack before 25 years of age.

The classification of the National Committee for Mental Hygiene has two more types, stuperous and circular types. It is their classification that we follow. I usually ignore the stuperous type and place them with the depressed.

With us there are three women to one man in the Manic-Depressive class. But it makes a difference as to who makes the diagnosis. A few days ago I picked up the recent reports from Virginia and Maryland and in one the men were slightly in the majority and the other the sex were about equal.

The term attack I believe, is better than type, for the reason that the same patient may exhibit all these forms. The patient may come to you in a maniacal condition, recover, return to his home and in a year or two be returned to you in a state of extreme mental depression.

In the maniacal attack there are a few symptoms which, if you can get positively and without a doubt, will make the diagnosis. They are a rapid flight of ideas and great distractability. I have in mind the case of a woman brought to us with a diagnosis of beginning paresis. She had a history of syphilis and a four plus Wasserman. When I walked into her room she glanced at my Elks pin and said: "Hello, Bill, I just came from Florida, I have been in every jail in the United States, I want some lemonade," etc. She talked nearly all the time and her sentences just about as disconnected as the above. She recovered in a few months and went home. Of course, at her examination I found none of the physical signs of paresis and she was a manic-depressive case with syphilis as a separate incident.

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*Read before the Madison Five Counties Medical Society, Norfolk, February 19, 1929.

Under the manic attacks, there are different stages such as Hypomania, Mania, and Delirious Mania. These are only phases in the progress of the disease.

The milder cases (hypomania) may never lose consciousness, and apprehension and memory will be undisturbed; yet they may have a mild flight of ideas. Delusions may not be present or are poorly defined, but they boast unreasonably about what they have done and can do. They exaggerate like some of us when we catch a few fish.

There is in the (Manic Phase) increased psychomotor activity. They take long walks, write many letters, stay up late and get up early. They may want to change their usual occupation and plunge into big business and may dissipate their resources if not controlled. In this state, memory for recent events is not always correct and they lack insight. Onset is usually sudden following a short period of headache or malaise, although a few days of depression may precede. Emotionally they are usually happy, but interference or contradictions may lead to outbursts of passion with profane abuse, assault or destruction of clothing or other objects.

Sleep is much disturbed and patients may go weeks with little or no sleep. While this condition does not usually last long, it may go on for years. I knew one case to go for seven years that he seldom slept, unless given very large doses of hypnotics, and finally recovered. They generally lose weight, although the appetite is increased, but food is taken hurriedly.

Delirious mania is the extreme of the manic states. There is great psychomotor activity, incoherence of speech, rapid flight of ideas, numerous hallucinations and dream-like delusions. These may be expansive or depressing. Consciousness is greatly clouded and disorientation complete. Emotions are of the extremes. Their destructive tendencies are only limited by their strength. They eat irregularly and sleep very little if any. If they do not start to improve in from ten days to two weeks, they usually die from exhaustion. Pulse is rapid and temperature rises.

These cases are rare and some writers think they may not belong to the manic-depressive psychoses. The sordes on their teeth and lips looks like a typhoid condition. Physicians who are not familiar with these cases sometimes diagnose typhoid fever.

There is some severe and rapid intoxication, the nature of which we have not discovered.

The Depressive States comprise Simple Retardation and the Delusional Form.

The onset in Simple Retardation is generally gradual, except in a few cases which follow acute illness or mental shock. There appears gradually a sort of mental sluggishness; mental processes become retarded, thought is difficult, and patients find difficulty in coming to a decision, in forming sentences, and in finding words with which to express themselves. It is hard for them to follow the thought in reading or ordinary conversation. The process of association of ideas is remarkably retarded; the patients do not talk, because they have nothing to say; there is a dearth of ideas and a poverty of thought. Familiar facts are no longer at their command, and it is hard to remember the most commonplace things.

Consciousness and orientation are well retained, but customary actions, such as walking, dressing, and eating, are performed very slowly as if under constraint. Because of this extreme retardation, the patients rarely commit suicide, although they often express the desire to die. Attempts at suicide are more to be feared when the retardation has disappeared, and while the despondency still persists.

In the emotional attitude there is a uniform depression. The patient sees only the dark side of life. The past and the future are alike, full of unhappiness and misfortune. They fear business reverses and begin to economize, even denying themselves and their families the necessaries of life.

Insight is frequently present, the patients appreciating that a change has come over them. This very often is characteristically expressed as a feeling of inadequacy. The patients say, "I am not sick, I am only lacking a will of my own." "I can't pull myself together." "I have no energy, I can't get hold of myself." "I feel all gone and I can't make up my mind to do anything." Sometimes the recurring sadness is ascribed to external influences, such as, unpleasant experiences, changes in the environment, etc.

The Delusional Form of depressed cases is characterized by the presence of varied depreciatory delusions, especially of self-accusation and of a hypochondriacal nature, in addition to the evidences of retardation. The onset of this form is usually subacute, following a period of indisposition, and occasionally even a short period of exhilaration and buoyancy of spirits; a few cases appear after an acute illness or mental shock. They feel that they have been great sinners, have neglected their duties and made many enemies, have never done anything right, and their whole life has been one long series of mistakes. They accuse themselves of bringing misfortune on others or of causing some great calamity.

Hypochondriacal delusions are prominent and are usually associated with numerous false bodily sensations; their health is ruined as the result of masturbation; they are succumbing to some malignant disease, and their organs are wasting away. Female patients complain of being pregnant, and often accuse themselves of immorality and masturbation.

Hallucinations are occasionally associated with this condition, when groans and moans are heard, disagreeable odors permeate the room, terrible apparitions appear at night, and fearful scenes are depicted.

The consciousness is for the most part unclouded, and the patients are usually oriented, and comprehend correctly what transpires in their environment, although occasionally they develop some delusional ideas in reference to the home or institution and the persons around them.

Insight into the condition is very often present, yet while admitting recovery from previous similar attacks, they declare that their present condition is so much worse that they can never recover. Some of these patients go to an institution of their own accord. The emotional attitude is uniformly one of depression. The patients are dejected, gloomy, and perplexed, and lament for hours in monotonous tones. They say little to those about them, but sit staring into space and paying very little attention to their environment.

Stuporous states as I said before I have been placing with cases of retardation of these depressed types or attacks. Their cases are a little more profound than those of simple retardation but it saves some of the confusion of too many subdivisions.

Physically, these depressed cases complain of muscular weakness, numbness in the head and ringing in the ears. Sleep is broken and appetite poor. Respirations and heart action weak and slow and blood pressure increased.

Mixed states are where the symptoms of one pass rapidly to the other within the day or even a few minutes.

In the Circular types, the patient passes gradually from one phase to the other. A maniacal case may settle down to normal and remain but a short time, generally a few days and pass into the depressed phase, or vice versa.

Cases most likely to be confused with the Manic-Depressive are: The Beginning Paresis, Involution Melancholia, and Catatonic Dementia Praecox.

In Paresis the physical symptoms and history with the Wasserman test will nearly always show the difference.

Involution Melancholia comes between 50 and 60 and are always depressed, whereas Manic-Depressive comes earlier and by 50 will likely have had several attacks. While the Manic-Depressive may have their first attack from 10 to 70, the greatest number come from 15 to 30.

It is more difficult to distinguish the first attack of Manic-Depressive depressed attack, from the depression of beginning Dementia Praecox. Rapid appearance of senseless delusions and numerous hallucinations speak for Dementia Praecox. In Dementia Praecox there is obstinacy where in Manic-Depressive there is retardation in their response to questions. The manic-Depressive does not answer because he cannot at once, but may if you give him time and repeat the question frequently he will. The Dementia Praecox refuses from obstinacy no matter how long you wait or how frequently you repeat the question.

TREATMENT

Treatment is best carried on in a sanitarium or hospital for that purpose. Conserve the strength by quiet and rest with nutritious diet. Sleep may be induced by warm baths, hyoscine and morphine, massage. Bromide and chloral sometimes are sufficient. Bowels must be regulated. Remove or avoid any predisposing cause such as alcohol, too frequent child-bearing, unsuitable occupation, and extreme fatigue. Sterilization should be done in those likely to procreate.

Here, we use graduated doses of deoderized tr. of opium, in disturbed cases.

In this description I have quoted from Diefendorf's translation of Kraepelin's seventh German edition of "Psychiatrie."

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MEDICAL EDUCATION IN THE UNITED STATES

An interesting presentation of educational data for 1929 by the Council on Medical Education is given in the *Journal American Medical Association.*

We learn that the total number of medical students for the past school year, including special and postgraduate students was 20,878 an increase of 333 over the previous year.

The total number of graduates for the year ending June 30 was 4,446 an increase of 184 over the previous year. Of the 4,446 medical graduates, 2,951 had also obtained degrees in the arts and sciences, which figure is 243 more than the previous year. In 1910 only 15.3 per cent of graduates held collegiate degrees, whereas last year the percentage was 66.4 per cent, the largest number coming from Illinois medical colleges.

"As a rule medical schools affiliated with junior colleges or others having special classes for premedical students have the smallest numbers of students holding baccalaureate degrees. The best premedical preparation, it is believed, is that obtained by students in the courses leading to the degree of Bachelor of Arts or Science in the college or university attended, since on the university campus they come in contact with students preparing for various other professions or lines of activity and have obtained a knowledge of such professions and activities before selecting their own life work.

It must not be inferred from these statements that a baccalaureate degree should in any sense be made a requirement for the obtaining of either a medical degree or the right to practice medicine. With the requirement of two or more years of premedical study, medical education in the United States is now on a par with the requirements in other countries. There is no objection to any medical school which so desires to require entrance qualifications in excess of two years and students who have the time and means also have the unquestionable right to continue their college education and obtain the degree if they so desire. It is believed, however, that provision should always be made for students otherwise exceptionally qualified who cannot obtain the two extra years of college work.

As to medical licensure, the Council on Medical Education and Hospitals, from the first, has believed that the minimum premedical requirement should not exceed two years of college education."

There were 214 women graduates of medicine this year and 925 women studying medicine.

The number of medical schools in the United States remains at 80. In 1922 the number of graduates had dropped to 2,529 from the peak of 1904 of 5,747.

It is stated that there has been an increasing supply of well qualified graduates since 1922.

The ages of graduates varied in 1929 from 21 to 53 years, the greatest number, 855 graduating at 25 years of age.

Of medical students attending the Nebraska medical schools 202 out of the 312 at the University College of Medicine were residents of the state and 67 of the 200 attending Creighton University College of Medicine were residents.

"OSTEOMYELITIS AND COMPOUND FRACTURES"

Nebraska medicine is assuming a place in authoritative medical literature. Within a year three Nebraska authors have published the results of their work in book form. It is said that publishing houses have discovered of recent years that the Western author is intensely practical and pointed in his writings, and therefore commands more readers for his product than the (presumably) more polished didactic authorities of the Atlantic seaboard states.

Our own Dr. H. Winnett Orr, Lincoln orthopedic surgeon, whom we all know as an indefatigable worker, has published the results of his researches on "Ostemyelitis and Compound Fractures" in a neat volume of 200 pages by Mosby.

Dr. Orr devotes the first chapter to a consideration of Lister and Listerism and another to "Lessons of the Great War" in which he took a part as surgeon major, part of the time as consultant in orthopedic surgery at Savenay. Up to within very recent years the treatment of osteomyelitis was very unsatisfactory. The author says: "Facing the difficulties encountered in the treatment of osteomyelitis, I have outlined a method which aims, in conformity to fundamental surgical principles, both as regards the care of the infected bones and joints and the care of wounds surrounding them, to provide: first, immediate adequate drainage at whatever stage the osteomyelitis is encountered; second, the maintenance at rest of inflamed parts by the application of plaster of paris cast, aided if necessary by ice tongs or other methods of skeletal fixation; third, wide open drainage by means of a sterile vaseline pack; fourth, primary asepsis or antisepsis avoiding the use of irritating antiseptics in the wound; fifth, post operative care emphasizing rest without antiseptic dressings which usually increase and complicate infection, and sixth, the maintenance of all injured parts, bones and soft parts, in their correct anatomic position during the entire period of healing. This procedure which is called the "Orr method" is the result of observations regarding the bad effects of contemporary "Listerism," the mistakes of our wartime care of injuries, and the errors of civil practice since the war."

The principles here enunciated are carried out in the treatment of infected compound fractures. Correct length, position and immobilization are the cardinal principles. Fixed traction is illustrated.

The book appears to us a very valuable contribution to the study of the two conditions named and a simple exposition of practical methods for surgeons.

THE CONQUEST OF CANCER BY RADIUM AND OTHER METHODS*

The published results of medical research is always of interest to the profession; but it is of intense interest to the Nebraska profession when the author is one of their very own. Dr. Daniel T. Quigley, Omaha, in "The Conquest of Cancer" has produced a volume that will attract attention wherever the English language is read.

During the past decade we have been deluged with such a chaotic mass of literature relating to the cause and cure of cancer—often so illogical as to be ridiculous, usually a rearrangement of old theories and superstitions clothed in ultra-scientific language and presented as something new and valuable—until we despaired of ever knowing how this age-old scourage of humanity might be combatted.

Out of this chaos comes this sane, logical, keenly analytical book which gives to the profession one of the most valuable contributions on the cause and cure of cancer that has yet been published. Shorn of complicated medical terminology it is presented in such simple language that any educated layman may readily grasp the points as the author presents them.

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*"The Conquest of Cancer by Radium and Other Methods". By Daniel Thomas Quigley, M. D., F. A. C. S., Instructor in Surgery, University of Nebraska, College of Medicine; Fellow of the American Medical Association; Member of the American Association for the Advancement of Science, Nebraska Academy of Sciences, North American Radiological Society, American Radium Society; Fellow of the American College of Radiology, etc.; Director of the Radium Hospital of Omaha. 539 pages, 334 engravings. Price $6.00. F. A. Davis Co., Philadelphia, 1929

A readable book and so engrossing that one dislikes to lay it aside before it has been completed.

The years that this well known surgeon has devoted to the intensive clinical study of the disease, render his statements authoritative and even the most critical analysis of the subject matter discloses no statement to which the unbiased reader can take exception. His treatment of the subject is optimistic and he contends that the pessimistic attitude of the profession in regard to cancer is due to the fact that they have known and studied cancer only in its advanced and terminal stage. He says "Only within the last few years, as a result of real scientific study, as a result of getting away from the unfounded theories and hypothesis of former generations, have we been able to uncover the fact that something exists in cancer besides the terminal, fatal, bleeding, paining, stinking stage. Within the last few years we have been able to follow events through from the infliction of certain insults to tissue to an exaggerated defense mechanism on the part of the organism which builds up an exaggerated mass of new cells, through a period when these cells become parasitic and prey upon the vital parts of the host, eventually causing death.

"Science has given us the key to the situation, and it has also given us the reason for a different outlook on the cancer problem. From an attitude of abject, hopeless and black pessimism, our picture may be changed to one of reasonable optimism, the only thing necessary for the control of the disease being the control of the factors that lead up to the development of the disease. Cancer instead of being a complex thing of which we know nothing is a very simple thing of which we know a good deal. We probably know more about cancer than about any other chronic disease. Instead of being hopeless from the standpoint of cure it is probably the most easily and surely curable of any of the chronic diseases."

Chapter VI on Pre-Cancer deserves the careful consideration of every one who treats ailing humanity. The author declares that we must "make our diagnosis before it is cancer, or at least while the cancer is still local. Cancer that has ceased to be local has ceased to be curable." He contends that microscopic examination is not infallible and should not be relied upon implicitly: that biopsy often disseminates the disease. "Biopsy is usually not necessary but if it is done the diseased area from which the specimen is taken should be thoroughly rayed with radium immediately before the biopsy. This will reduce the vitality of the cancer cells and will limit the possibility of dissemination or transplantation."

The special etiologic factors in connection with cancer in each region of the body are thoroughly discussed and in analyzing its etiology in general the author contends that it is due to one or more predisposing causes, such as mechanical, chemical or thermal irritation which invariably lead to a chronic low grade infection which is the immediate cause of the new growth. In support of this theory we find such statements as: "The dominant thing in the stimulating of cells to proliferate, can not be other than presence of low grade pathogenic micro-organisms;" "Acidity is one of the requisites to the development of the cell proliferation we call cancer;" "It is evident that the cancer is not produced by any one germ but that any germ that may localize and colonize and maintain its existence in any part of the body may produce the necessary irritating toxins, and set in motion the chain of events that eventually becomes cancer;" etc.

Various methods of treatment are presented but the author's experience causes him to stress the use of radium. His methods embrace the proper use of Radium, X-Ray and Surgery according to indications many times in conjunction with each other. His diagram illustrating the relative importance of the successful remedies taken alone shows that Surgery is successful in 50 per cent of cancer cases, Radium 40 per cent, and X-Ray 10 per cent, however, he states that Radium either by itself or in conjunction with Surgery or X-Ray or both, has a field of usefulness as a primary remedy, or as an adjuvant which covers practically the whole field. In advanced cases when the idea of cure is abandoned and a remedy is sought for pain relief, lengthening of life and the getting rid of disagreeable symptoms, then X-Ray assumes a considerable importance and ranks at least equal to Surgery and Radium."

The illustrations taken from photographs showing cases before and after the treatment are unusually good and the author is to be complimented upon his arrangement of the notes relating to these illustrations. All are arranged consecutively and in such manner that there is never any question as to which picture the note refers. The excellent results shown by the illustration certainly are impressive and one cannot but feel that Doctor Quigley's optimism is justified.

To the general practicioner, the internest, the surgeon, and the specialist however limited his field may be, this book is indispensible if he would be prepared to give his patients the benefit of what is newest and best in prevention and cure of cancer.

—H. C. Miller, Omaha

THE EDUCATIONAL PROGRAM AT THE STATE FAIR

The Public Activities Committee of the Nebraska State Medical Association, under the able, energetic and enthusiastic leadership of Dr. E. R. Hays, of Falls City, has this year sponsored a program at the State Fair well calculated to bring home to the people the practical value of health preservation and disease prevention. Public health lectures, moving pictures, exhibits, attractive posters, physical examinations for children and for adults constituted the means of medical education for the layman.

The extensive program called for the co-operation of many physicians. All those called upon responded with promptness and enthusiasm. Year by year the Nebraska State Medical Association receives better and stronger representation at the State Fair. In view of the very large numbers of people who are daily visitors, the Nebraska State Medical Association has a fine opportunity of laying before the people of the state the possibilities for health inherent in the periodic examination and the importance of early medical and surgical intervention in the hopes of preventing the graver and more serious consequences of neglect.

An added feature of this year's program was the health lectures offered to the public at the State Fair. One lecture was scheduled for the Monday, Tuesday, Wednesday and Thursday of the week in which the fair was held.

As an example of the subject matter and the type of presentation suitable for popular discussion we append the remarks in abstract of few of the speakers:

Some Preventable Diseases—Dr. P. H. Bartholomew, Lincoln, Director of State Health.

Of the many preventable diseases affecting humankind we classify three as definitely preventable through the application of scientific means. The diseases are diphtheria, smallpox and typhoid. Failure to take advantage of the protection afforded by science has entailed an untold economic loss to humanity, in addition to needless loss of life.

Diphtheria is most prevalent and produces its heaviest mortality in early childhood due to the fact that this period is one of greatest susceptibility or least immunity. With a simple, harmless procedure in the use of toxin-antitoxin a complete immunity against diphtheria can be established, which, so far as determinable at present, remains permanent. In some communities of considerable size where toxin-antitoxin was used systematically they have entirely eliminated this disease from their citizens. There is no reason other than indifference why such action cannot be general.

About 130 years ago Dr. Jenner, after waiting 20 years to prove definitely his theory, announced and demonstrated a positive means for preventing smallpox. Yet. today, the United States ranks with or below such countries as India and Russia in the prevalence of this scourge. Every epidemic for years has been controlled by resorting to general vaccination. Therefore, how much more rational to forestall this disease by taking advantage of the protection afforded through general vaccination. The present method of vaccination is more simple and without the difficulties that formerly followed.

One has only to compare the situation in our army during the Spanish American War to that of the World War for definite evidence that the inoculation method of preventing typhoid fever is one of the most valuable contributions medicine has presented. Soldiers died like flies in 1898 from typhoid, while during the World war this disease was practically non-existent in our army of over four million men.

Many people believe that typhoid fever is contracted from contaminated water exclusively, whereas today this is the most unusual means of transmission. Though occasional instances of mass infection do occur in this manner, a very large number contract this disease from food, often uncooked, handled or prepared by a carrier. A typhoid carrier is a person who has had the disease and still harbors and excretes the typhoid germ. Such person should never be permitted to handle food for consumption. Particularly should travelers and vacationists take advantage of the protection of typhoid inoculation, for they are necessarily exposed more than those who eat at home or where a closer check for their safety can be made.

Personal Hygiene—Dr. B. Carl Russum, Professor of Pathology and Preventive Medicine, School of Medicine, Creighton University.

The examinations of over 700,000 people periodically examined revealed that over 50 per cent had derangements warranting medical or surgical attention. In one series of 985 postoffice employees examined by the U. S. Public Health Service 24 per cent had advanced physical impairments.

Our partial triumphs over such communicable diseases as scarlet fever and diphtheria has increased our life expectancy for all ages up to fifty-two, but after that age our life expectancy has decreased when compared with 1900. This is due to increased deaths from heart disease, kidney trouble, diabetes and cancer. Four out of every 1000 people will die of diseases of the heart, blood vessels and kidneys.

Periodic Health Examination was urged as the first step to increase our span of life. Everyone is urged to visit his physician at least every six months, regardless of how well he feels.

Our conception of proper diet has undergone a rapid change, and the teaching of dietetic values and nutrition has assumed such an important part in our lives that the average school child of the next generation will know more about diet than many adults of today.

The maintenance of a proper weight is one of the best guides of the efficiency of a diet. A derivation of ten to fifteen per cent from average weight is allowable, but more variation is pathological. The usual gain with advancing years is not physiological, but is a definite handicap to heart and blood vessels. Weight cannot be kept down by exercise such as golf, for we simply cannot exercise enough. Proper diet is the only method. A business man can sit at his desk and reduce his weight without exercise and without discomfort, if he will eat bulky foods with low food value. It is not necessary for him to cut out carbohydrates and fats; he must simply cut down their amounts.

Underweight before the age of thirty is unfavorable, and is often associated with lessened resistance to tuberculosis and other infections.

Common Sense in Medicine—Dr. Lucien Stark, Norfolk.

Progress in medicine and medical treatment are in line with logic and every day common sense. Scientific medicine is neither magical, miraculous, or mysterious, or beyond comprehension. Any one who professes to heal by methods that cannot face the light of common sense, scientific reason, observation and experimentation is not practicing medicine, but is merely taking financial advantage of some people's collossal incredulities.

The more people become acquainted with the methods of real medicine, the less likely will they frequent the man who, without adequate education and training, sets himself up as a healer of human ills by following methods, spectacular in outward appearance, but failing entirely when measured by the yardstick of common sense and favorable clinical outcome.

It is to be hoped that the medical missionary work at the State Fair will continue each year with increasing vigor. To any one who doubts the wisdom of these activities, it may be stated that any concerted effort aiming to popularize the ideal of maintaining oneself in good health and the ideal of removing early physiological handicaps is adding to the sum total of human happiness. Health, work, and religion are the three things that make life least a bore and most a blessing. After all is said and done, the chief and lasting satisfaction of the physician is that he has been able to make life less difficult for others.

—Victor E. Levine.

EDITORIAL PARAGRAPHS

Twenty-five years ago one out of six babies died before it was a year old; now but one in fourteen dies.

The Twelfth Annual meeting of the American Dietetic Association will be held at Hotel Statler, Detroit, October 6-11.

Dr. Homer Folks, a prominent social worker at Washington, estimates the cost of sickness to the American people amounts to $3,700,000,000 annually.

The Kansas City Annual Fall Conference of the Southwest Clinical Society is scheduled for October 7-11th. These conferences are well worth attending.

Sturgis and Isaacs, (*J. A. M. A.*, Sept. 7, 1929), have demonstrated that dessicated hog stomach produces a hematopoietic remission in pernicious anemia.

Among the 150 authors contributing to Abt's Pediatrics we notice the names of Dr. Palmer Findley, Omaha, and Dr. H. W. Orr and Dr. J. E. M. Thomson, Lincoln.

It is reported that an appreciative patient bequeathed to Dr. George W. Reneker, and wife, Falls City, some valuable real estate. Such bequests are sufficiently rare to merit mention.

The annual meeting of the American College of Surgeons will be held in Chicago, October 14-19, with headquarters at the Stevens Hotel. The usual amount of foreign and native talent will appear on the program.

The Institute of Child Welfare of the University of Minnesota has determined that on an average it takes a child twenty minutes to go to sleep. The result is based on observations on one thousand cases.

A credit bureau covering a county of 25,000 population in this state records 42 chattel mortgages given for purchases of automobiles, in one week. If chattel mortgages given for automobiles make times good, then we are riding on the topmost wave of prosperity.

It is reported that a man of uncertain training and unlicensed to practice medicine in this state was called upon to straighten the contracted limbs of a paralytic and in attempting to do so fractured one of the limbs above the knee. He was arrested for practicing without a license and fined.

The "melitensiphobia" of at least one member of the Nebraska profession who reported a case of undulant fever in these columns some months ago, together with the assistance of the health laboratory at Lincoln, has brought to diagnosis another case of undulant fever. Perhaps, after all, there is a justification for a "melitensiphobia."

Inhaling carbon dioxide gas temporarily restored the sanity of mentally deranged patients at the University of California Medical School. Eight trials were made on dementia praecox cases and in all but one there was a fleeting return of intelligence which enabled the patients to answer questions intelligently or to exhibit recognition of their surroundings.

That it does not take a smart man to catch fish where there are fish in abundance, was proven by the editor's experience. Every boyhood summer day of his life he was on the creek fishing. Then elapsed a period of fifty years during which no fishing was attempted. A recent trip to Leech lake brought its reward in an abundance of pike of the usual proportions.

Hoffman, in the *Spectator,* insurance journal, concluding an exhaustive survey on the mortality rate of cancer, says: "By every standard of mortality investigation these figures are absolutely conclusive as evidence that the actual mortality from cancer in proportion to population is rapidly increasing irrespective of the tremendous progress which has been made in the treatment of the disease."

Former President Coolidge says his regular White House breakfast consisted in part of a dish composed two parts of whole wheat and one part of rye, cooked together. Evidently this is a New England dish and how much better than the dozens of breakfast foods offered. One bushel of wheat will make as much, perhaps better breakfastfood than a hundred dollars would buy of the widely advertised fancy goods. Where economy has to be considered this is worth remembering.

A clinical study of tobacco smoking, by Johnson, a non-smoker, (*J. A. M. A.*), on 150 smokers and the same number of non-smokers above twenty years of age leads to the following conclusions:

"1. Tobacco smoking apparently has no permanent effect on the blood pressure.

2. There is no foundation for the popular belief that smoking decreases the weight of an individual.

3. It is doubtful whether tobacco plays a major part in the etiology of angina pectoris.

4. The act of smoking, if it affects blood pressure at all, reduces it temporarily.

5. The effect of tobacco smoking is chiefly local, exerted principally on the pharynx."

Not long ago an article in a popular magazine suggested that the solution of the cost of hospital care lay in classifying hospitals like hotels, first class and second class, people to select the class for which they can pay, like one selects a hotel. The idea seemed to have some merit. Now comes Dr. Herman N. Bundesen, formerly health commissioner of Chicago, with the suggestion that some kind of a medical balcony is needed for the man of moderate means—"the rich man, when he goes to the opera, goes in style—evening dress, a box, everything. When the middle-class man goes, he is apt to sit in the balcony. But when they are sick, they both go to the hospital in about the same style—and if the salaried man has to mortgage his future to pay the bills, that's too bad."

THE LIFE WORK OF JOHN MILLS MAYHEW

August 5, 1929 occured the sudden death of Dr. J M. Mayhew of Lincoln, Nebraska in the fifty-ninth year of his life. Death was due to acute pulmonary edema, the result of a long-standing nephritis.

Dr. Mayhew was the son of Peter and Alice Mills Mayhew residents of Cinncinatti, Ohio where he was born. His father died while Dr. Mayhew was yet an infant and the most of the years of his childhood were spent with his mother in the home of his uncle, the noted minister Dr. John Mills. They resided for a time in Idaho Springs, Colorado; Beatrice, Nebraska and Evanston, Illinois.

His collegiate training was obtained at Princeton University where he was granted the two degrees of B. A., and M. A. Among his classmates at Princeton were the celebrated writers, Booth Tarkington and Jessie Lynch Williams with whom Dr. Mayhew collaborated in the production of several Light Operas for which Tarkington and Williams prepared the words and the Doctor composed the music.

He received his medical training at the College of Physicians and Surgeons in Chicago at a time when such celebrated teachers as Christian Fenger, Frank Billings and Henry Neuman were identified with the curriculum. He received the M. D. degree in 1895. He became first assistant to Henry Newman and later practiced independently in Chicago for six years with a brilliant future in prospect when ill-health required removal to Lincoln, Nebraska in 1901.

Since that time until the day of his death he was an active practitioner of medicine, having attained to an enviable position in the community as an internist and a specialist in Diagnosis. Numerous periods of post-graduate study were made in Eastern Universities and in Europe.

Seldom is nature so lavish as to endow one individual with ability to excel in many fields of endeavors. Dr. Mayhew possessed not alone the native talent in fields of medicine, science, music and art; he had also the inspiration and ideals to cultivate his ability and extend it in various avenues of service to humanity.

In early youth he acquired skill as an organist and through-out the major portion of his life he was attached to the music departments of prominent churches. As a boy organist he supplemented the missionary labors of his noted Uncle in the pioneer days of Colorado. His mother sang in these meetings. Throughout the course of study in college his finances were obtained through the agency of music. While at Princeton he was organist and conductor of the full boy choir in the Episcopal Church and was appointed lay reader. He was organist for nine years in the First Congregational Church of Chicago. In Lincoln he was for a time organist in the First Presbyterian Church and for many years after that at the First Baptist Church which position he resigned only upon his appointment to Chief of Staff of the Lincoln General Hospital, the exacting duties of which demanded too much time to longer participate actively in music.

Dr. Mayhew has always been closely identified with musical activities and gave numerous recitals in Lincoln and in various parts of Nebraska and Iowa, many of which were exercises for dedication of new organs. The last recital was given about a year ago in the new First Presbyterian Church of Lincoln at the request of many of the older friends and associates who longed to hear him again. He was a member of the national guild of organists.

He was a pioneer in specialized medicine, quickly taking a distinquished place as an internist and diagnostician soon after coming to Lincoln at a time when specialization was little advanced. Throughout the years of his practice his influence and encouragement was always in the direction of better scientific advancement and ethical and specialized progress.

His training and intellectual attainments won early recognition and brought to him two university appointments. In the early years of the present University College of Medicine he taught clinical diagnosis and in later years lectured on medical jurisprudence in the law college.

The outstanding service of Dr. Mayhew in the field of medicine for which he has specialy won the love and admiration of his immediate medical associates was his work as Chief of Staff of the Lincoln General Hospital. Receiving this appointment at the time of the opening of the new hospital in 1925 he continued as Chief of Staff and head of the department of Internal Medicine to the time of his death. It became necessary to coordinate and organize into a smooth working staff a group of physicians and surgeons whose interests and relationships had been previously diverse. The fact that the close and most sympathetic cooperation with entire freedom from serious dissention was established and maintained, has been due largely to the leadership and organizing ability of the Chief of Staff whose personal interests were always subserviant to those of the hospital and his associates.

Through the continued insistence of Dr. Mayhew, as Chief of Staff, the medical profession of Lincoln has acquired a new interest in Necropsy study. Physicians are diligent in securing the consent of relatives and the attitude of the public in this community toward autopsies has been changed with the result that a large proportion of all hospital deaths and many others are posted with a decidedly beneficial result.

The efficient and wise management of the first Chief of the Lincoln General Hospital will be long remembered by the personel of the hospital and the influence of his work will long react to the benefit of the institution.

Dr. Mayhew received the appointment of major in the world war and was assigned to duty as Chief of the Medical Staff at Camp Travis, San Antonio, Texas. There were 125 physicians under his leadership at camp. They attained an enviable record in the management of influenza having one of the lowest mortality records in the country.

The cultural side of Dr. Mayhew's life is exemplified by his associates. His closest friends and intimate acquaintances outside the medical profession were prominent in University Circles and other professions. He had membership in few clubs but these counted among their members men of literary and artistic attainments who found a congenial companion in one of similar tastes. He was a charter member of the Lincoln Country Club, a national director of the Professional Mens' club and a member of the Chamber of Commerce, the University Club, the Round Table, The Laymans Club and (THE) Club, composed of faculty men of the University. He was a member of the American Legion.

In his professional affiliations he was · member of the Lancaster County Medical Society, The Nebraska State Medical Association, the Missouri Valley Medical Association, the American Medical Association and was a Fellow in the American College of Physicians.

The home-ties that are broken in the Mayhew home were strong bonds of love and devotion. Those who are left are deeply conscious of the irreparable loss to them as to those whom he served in his professional capacity. His life work was always in the interest and for the benefit of others. In his home life, in his professional work and in his association with fellow-physicians no self-interest or preferment asserted itself.

The man who is lost to the medical profession in the passing of Dr. Mayhew was one who possessed a keen mind and a fine sense of humor; a lover of the beauties of nature; a charming and delightful companion whose greatest pleasure came from mingling with congenial and scholorly men; a gifted and versatile scientist; a man of sympathy, of understanding, of generosity and tolerance; a true humanitarian in the broadest senses.

I wage not any feud with death
For changes wrought on form and face;
No lower life that earths embrace
May breed with him can fright my faith.

Eternal process moving on,
From state to state the spirit walks;
And these are but the sheltered stalks,
Or ruined chrysalis of one.

Nor blame I death because he bare
The use of virtue out of earth;
I know transplanted human worth
Will bloom to profit otherwhere.

—Clarence Emerson, Lincoln.

THE KANSAS CITY FALL CLINICAL CONFERENCE

In this issue of the Journal there appears a condensed program of the Kansas City Southwest Clinical Society's seventh annual clinical conference to be held at Kansas City, Missouri, October 7th to 11th inclusive. Seldom has there been such an array of distinquished guests on a program as is noted in this meeting and this seventh conference of this organization is expected to be the biggest and best it has ever had.

The Clinical Society was organized in 1922 for the purpose, as set forth in its Constitution, (1) "To promote, encourage and develop the educational advantages of the clinical material of Kansas City that they may be available throughout the year to visiting physicians," and (2) "To hold an annual clinical conference which will demonstrate and emphasize the progress of medicine throughout the world for the benefit of physicians and surgeons of the Southwest." During these past seven years the Kansas City Clinical Society has enjoyed a most successful and enviable career and it can conscientiously boast of its great progress and growth.

A new feature of the meeting this year will be the Post Graduate Courses to be given daily. Special class rooms are being prepared and the instructors will be drawn from the distinquished guests and membership of the Society. Every visitor can receive a complete Post Graduate training in his particular specialty.

Two special sessions should be noted, namely, that of the joint meeting with the Kansas City Eye, Ear, Nose and Throat Society on Tuesday evening with Dr. Finnoff of Denver, Dr. Jackson and Dr. McCrae of Philadelphia as the principal speakers; and that of Thursday evening, a joint meeting with the American

Committee for the Control of Rheumatism. The subject of arthritis which is to be discussed by the Committee at this meeting should be most interesting and instructive.

The usual clinics at the Allied Hospitals will be held each morning and the ever popular Round Table Luncheons with short addresses by distinquished guests will be held each noon.

Plenty of entertainment has been provided, the Smoker on Tuesday evening, the Alumni Dinners on Wednesday evening, the Golf Dinner on Friday evening, in fact nothing has been neglected in trying to make the entire meeting the most profitable and instructive of any meeting held in the Southwest.

FINE FOLK

To the Editor: I have just finished reading Dr. F. A. Long's article on the Country Doctor. It is interesting and true.

My husband has been a country doctor for almost 40 years. The first 20 years we were in Missouri and have been 16 years in our present location, a town of 350 people. He has always had a large practice and has prospered accordingly. At the present time his income aside from the practice would more than afford a comfortable living. But every cent has been made by the doctor himself in a country practice.

The people are more than glad to employ a home doctor when he treats them in an intelligent manner, is honest, and faithful to his trust.

In the small towns the people are fine intelligent folks. Anyone would be glad to have them for friends. The schools are good. The roads here are fine. The pay is many times slow but usually sure. The real "dead beat" isn't so common in the country. The few there are can be easily avoided if one wishes. In a neighboring town there have been four new doctors in five years. One's motto was "Do as little as you can for as much as you can get."

Two were dope addicts. The other made a surgical case of everything he could get his fingers on. These he took to a city surgeon It wasn't long before the people saw through his dealings and turned elsewhere for service.

None of these stayed a year. Each one left blaming the country instead of himself.

The country doctor must know as much as the city doctor, be as well prepared for every kind of case. Keep up to date. He will have as much practice and in many instances more, than the city doctor.

Mrs. F. S.

Comment on the editorial "The Poor (?) Country Doctor" published in the June Nebraska State Medical Journal and republished in Medical Economics. This comment is reproduced from Medical Economics.

THE AMERICAN COLLEGE OF SURGEONS MEETING

The American College of Surgeons will hold its nineteenth annual Clinical Congress in Chicago, October 14-18. Headquarters will be at the Stevens Hotel. An intensive program is being planned to make this home-coming event the greatest in the history of the College. The Hospital Standardization Conference will consist of morning and afternoon sessions on Monday to Thursday inclusive. There will be a series of clinical demonstrations given by George W. Crile, Cleveland; John B. Deaver. Philadelphia; John M. T. Finney, Baltimore; Charles H. Mayo, Rochester, and others. Monday evening's program will include an address of welcome by the Chairman of the Chicago Committee of Arrangements, Dr. Herman L. Kretschner, the address of the retiring President, Dr. Franklin H. Martin, Chicago, the inaugural address of the new President, Major-General Merritte W. Ireland, Washington, D. C., and the John B. Murphy Oration in Surgery by Professor D. P. D. Wilkie of Edinburgh. Among the foreign visitors will be: Dr. James Heyman of Stockholm, Dr. Thierry de Martel of Paris, Visconte Aguilar of Madrid, and Mr. Herbert Tilley of London. Tuesday, Wednesday and Thursday evening sessions will consist of scientific papers presented by surgeons from the United States, Canada and from abroad. The Annual Convocation of the College will be held on Friday evening. The Fellowship Address will be delivered by Dr. Glenn Frank, President of the University of Wisconsin. The annual meeting of the Governors and Fellows will be held Thursday afternoon followed by a symposia on cancer and bone sarcoma. An all day session on Traumatic Surgery will be held on Friday in which leaders in industry, labor, indemnity organizations and the medical profession will participate. A special program has been arranged that will be of interest to those whose practice is limited to surgery of the eye, ear, nose and throat. A feature of the Congress will be the showing of surgical films that have been produced under the supervision and approved by the Board on Medical Motion Pictures of the College. New developments in color photography will be demonstrated. In addition to the commercial exhibits, there will be scientific exhibits by the departments of the College. A rate of one and one-half the regular one way fare has been granted on railroads of the United States and Canada to those holding convention certificates.

THE PACIFIC PHYSIOTHERAPY ASSOCIATION

The Annual Meeting of this association was held at the Alexandria Hotel, Los Angeles, California, June 21st and 22nd, with an attendance of 250. An excellent program of twenty papers was presented by the leading lights in Physical Therapy. The Banquet on Friday evening was a happy event, the interest being enhanced by an impromptu testimonial to Dr. Burton B. Grover, the Dean of High Frequency, who had just turned the half century mile-post of medical practice, and reached the age of 71 years. Dr. Grover is president of the American Electrotherapeutic Association.

The election of officers resulted as follows: Wm. W. Worster, M. D., San Gabriel, president; Clinton D. Hubbard, M. D., Huntington Park, vice-president; Herbert V. Mellinger, M. D., Los Angeles, secretary-treasurer; and Charles Wood Fassett, M. D., Glendale; Cora Smith King, M. D., Los Angeles; Herbert Scholtz, M. D., Oakland; J. Severy Hibben, M. D., Pasadena, and Howard C. Slaughter, M. D., Los Angeles, executive committee.

The Medical Herald and Physiotherapist was selected as the official organ of the Association.

The Association meeting was preceded by a four days session of the Western School of Physical Therapy, the first session ever held west of Kansas City. The interest manifested in the course was very gratifying to the sponsors, and a second session of the school is under consideration.

THE SOCIETIES

The first meeting of the fall season for the **Omaha-Douglas County Medical Society** was held in the Medical Arts Auditorium on September 10, 1929, Dr. C. W. Pollard presiding in the absence of President Langdon.

The main speaker of the evening was Dr. Jennings C. Litzenberg Professor of Gynecology and Obstetrics in the University of Minnesota. He talked on Pitfalls in Obstetrics and Gynecology; various phases of cancer of the uterus, uterine myotomas and ectopic pregnancies were discussed. Special emphasis was laid on the early diagnosis of cancer of the uterus, particularly that of the cervix. Leucorrhea was discussed as an early sign of uterine malignancy.

—Herman M. Jahr, Secretary

The Madison Five Counties Medical Society met at Norfolk August 27. The following was the program for the meeting: "Some Observations in Endocrine Therapy" A. E. Mailliard, M. D., Osmond; "1800 Cases of Backache and Pain," Czar Johnson, M .D., Lincoln; "Early Clinical Signs of Acute Mastoiditis," J. W. Thomas, M. D., Lincoln; "Electrocardiograph Precision in the Examination of the Heart," E. G. Zimmerer, M. D., Lincoln.

HUMAN INTEREST TALES

Dr. A. J. Mullmann, has located at Talmadge.

Dr. G. M. Andrews has moved from Stella to Auburn.

Dr. L. W. Elwood has moved from Silver Creek to Geneva.

Dr. L. F. Curtis formerly of Omaha has located at Beemer.

Dr. Nevill Joyner formerly of Axtell has located in Casper, Wyo.

Dr. and Mrs. A. F. Srb, Omaha, motored to the Black Hills in August.

Dr. A. J. Cameron, Herman, spent the summer vacation at Green Lake, Minn.

Dr. and Mrs. T. L. Weeks, Nebraska City have been in California for several weeks.

Dr. H. M. Robbins, Cleveland, Ohio, visited with his parents at Lyons in August.

Dr. and Mrs. W. M. Thomas, Edgar, made a trip to the Black Hills during August.

Dr. L. L. Zierott, formerly associated with Dr. Clyde Roeder, Omaha, has located at Seward.

Dr. and Mrs. D. A. Walker, Mullen, motored to Illinois, Missouri and Kansas in August.

Dr. H. M. Robbins, Cleveland, has become associated with Dr. L. F. Chapman, West Point, Nebr.

Dr. Virgil McDonald, Seattle, former Nebraska City boy visited the scenes of his youth recently.

Dr. Ralph Schroeder, York, recent medical graduate has gone to Europe to return with a patient.

Dr. Homer Davis, Genoa, spent some time lately at Los Angeles with his son, Dr. Kenneth Davis.

Dr. and Mrs. W. F. Novak, Howells, enjoyed a trip to Niagara Falls and other points during August.

Dr. Leroy Crummer, Omaha physician and author of note for many years has moved to Los Angeles.

Dr. E. L. Robinson, Lincoln, (retired), and wife celebrated their golden wedding anniversary September 3.

Dr. W. C. Kenner, formerly of Talmage, has located in Nebraska City in association with Dr. J. P. Gilligan, Jr.

Dr. C. F. Kirkpatrick, Ashland physician for forty years, has been reported seriously ill in an Omaha hospital.

The marriage is announced of Dr. Henry Brinton Mikelberg, Philadelphia and Dr. Rose Rene Minkin, Omaha, August 6.

Dr. J. A. Lansp for the past three years at Detroit, Mich., has become associated with Drs. Zimmerer and Weeks at Nebraska City.

Dr. Paul Hemphill, North Loup, while on a vacation trip developed mastoiditis and was operated at the Battle Creek, Mich. Sanitarium.

Dr. Clyde Moore, Omaha, was called to Hollywood, Calif., owing to the illness of his father Dr. J. C. Moore, former Omaha practitioner.

Dr. Robert Preston, Fremont, has been appointed county physician of Dodge county, succeeding his father, the late Dr. S. A. Preston.

Dr. and Mrs. W. A. Cassidy, Omaha sailed a few days ago for Vienna where the doctor will spend three months doing work in the clinics.

Dr. Charles F. Ulrich, formerly of Omaha, has become associated with the Kenosha Clinic, Kenosha, Wis., in charge of the medical department.

Dr. K. E. Krueger, formerly of Dodge, has located at Winton, Wyoming. His practice will be in part a contract practice at Union Pacific coal mines.

The marriage of Dr. F. M. Watke, Columbus and Miss Marie Wolff of Hartington is announced. They will reside in Cleveland where the doctor is doing special work in a clinic.

Dr. H. W. Orr, Lincoln, has returned from London and Geneva where he appeared on the programs of the British and American Orthopedic Associations and the International Conference on the Care of Crippled, respectively.

Dr. Adam McMillan, Omaha Negro physician and former member of the Legislature has been selected as supervisor of a mission hospital at Angola, Portugese Southwest Africa. He will proceed to London to take postgraduate work before assuming the position.

A reception and lawn party was tendered Dr. and Mrs. J. J. Keegan and Dr. and Mrs. C. W. M. Poynter, on the evening of August 19, by Dr. and Mrs. B. B. Davis, Omaha, the occasion being in honor of the outgoing and the incoming dean of the University of Nebraska College of Medicine.

NECROLOGY

H. S. COWAN, Deweese, Nebr.; Keokuk Medical College, 1902; practitioner at Deweese for many years; died early in July, aged about sitxy years.

ELEANOR C. REED-GRAVES, Peru, Nebr.; Rush Medical College, 1885; practitioner at Peru for forty years; died September 5, 1929, aged about seventy.

L. L. CRAWFORD, Paonia, Colo.; Cincinnatti College of Medicine and Surgery, 1876; a practitioner at Merna, Nebr., from 1883 to 1896; and since then a resident of Paonia, Colo., died August 18, 1929, aged about eighty years.

JOHN C. DAVIS, Hollywood, Calif., (retired); College of Physicians and Surgeons, Keokuk, 1883; for almost two score years a practitioner of Omaha; father of Dr. J. Calvin Davis, Omaha; died at Hollywood, September 3, 1929, aged seventy-four years.

IN TEMPORE SENECTUTIS

When I am old
I will not have you look apart
From me, into the cold,
Friend of my heart,
Nor be sad in your remembrance
Of the careless, mad-heart semblance
That the wind hath blown away
When I am old.

When I am old
And the white hot wonder-fire
Unto the world seems cold,
My soul's desire
Know you then that all life's shower,
The rain of the years, that hour
Shall make blow for us one flower,
Including all, when we are old.

When I am old
If you remember
Any love save what is then
Hearth light unto life's December
Be your joy of past sweet chalices
To know then naught but this
"How many wonders are less sweet
Than love I bear to thee
When I am old." —Ezra Pound.

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NON-SURGICAL GALLBLADDER DRAINAGE

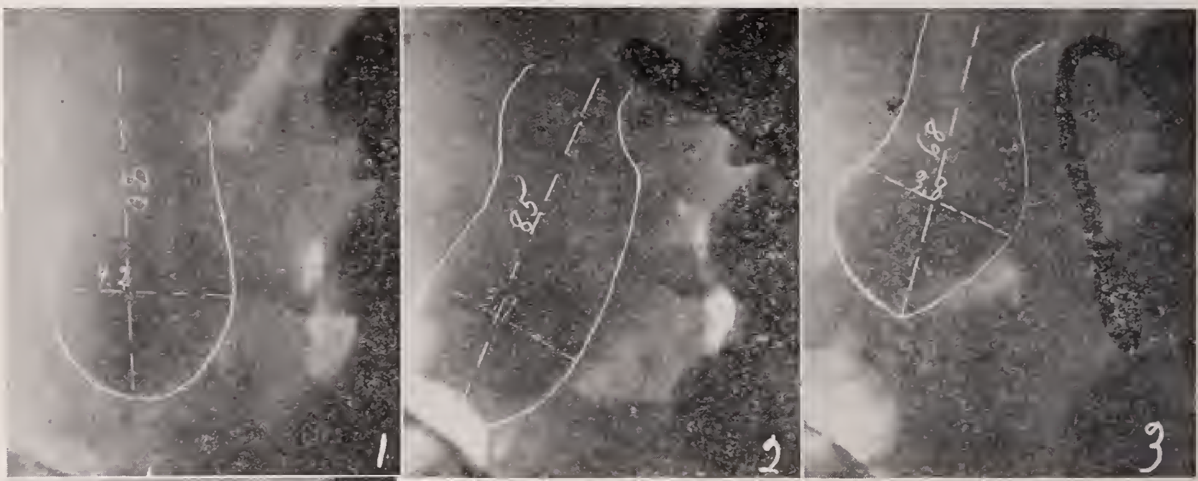
ARTHUR L. SMITH, M. D., F. A. C. P.,
Lincoln, Nebraska.

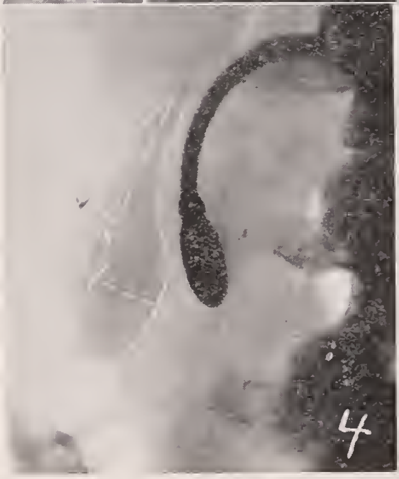
Transduodenal gallbladder drainage has met with such general condemnation by the members of the surgical division of our profession that it seems those who practice this method of non-surgical treatment must prove its value or discard it entirely. Of course, those who have never used this type of treatment are in no position to criticize its use but oftentimes not judgment but prejudice has a great deal to do with final conclusion. In my experience any treatment which tends to make operations unnecessary finds little favor with those who see treatment through surgical eyes.

After seeing Lyon's work in non-surgical drainage of the gallbladder in 1919, I began this method of treatment and diagnosis in 1920. In August 1920 and in December, 1923, I published two articles stating as my opinion that it was of value in the treatment and diagnosis in diseases of different parts of the biliary tract. I felt at the time the latter article was written, with an experience of over three thousand drainages, that my conclusions were not premature. At that time it was the consensus of opinion of the surgeons that it was worthless and some internists said that we should wait and later decide on its usefulness. Consequently I concluded that I would follow this method for five years and then report the results.

(During this time I have used every method possible to prove or disprove that the gallbladder and biliary tract is drained by the injection of magnesium sulphate or other substances into the duodenum. Many articles have been written in which it is stated that no bile from the gallbladder is recovered by this method but I believe I am prepared to show that it drains the gallbladder and all other parts of the biliary tract. During the past five years I have used this method for diagnostic purposes on every patient coming to me for a complete examination and have practiced it in treatment of all derangements of the biliary tract in which in my opinion it was indicated. Up to January 1, 1929 I have done or have had done under my supervision over seven thousand transduodenal biliary tract drainages.

Complete Examinations.—Incomplete and careless examinations are often the cause of incorrect diagnoses. No diagnostician can always be correct but careful painstaking investigations with the aid of helpful instruments and laboratory tests will go a long way in preventing mistakes. I believe the condition of every patient suffering from chronic disease demands a careful investigation of his entire body even though this requires more work and more concentration on the part of the examiner and is much more fatiguing than short haphazard examinations. It usually is not because one examiner is brighter than another that he has a higher percentage of correct diagnoses but it is because he is willing to put in the necessary time and effort to uncover all abnormalities. If gallbladder disease is secondary to some other infection then, of course, the primary infection must be found and removed before we can hope to clear away the secondary infection.





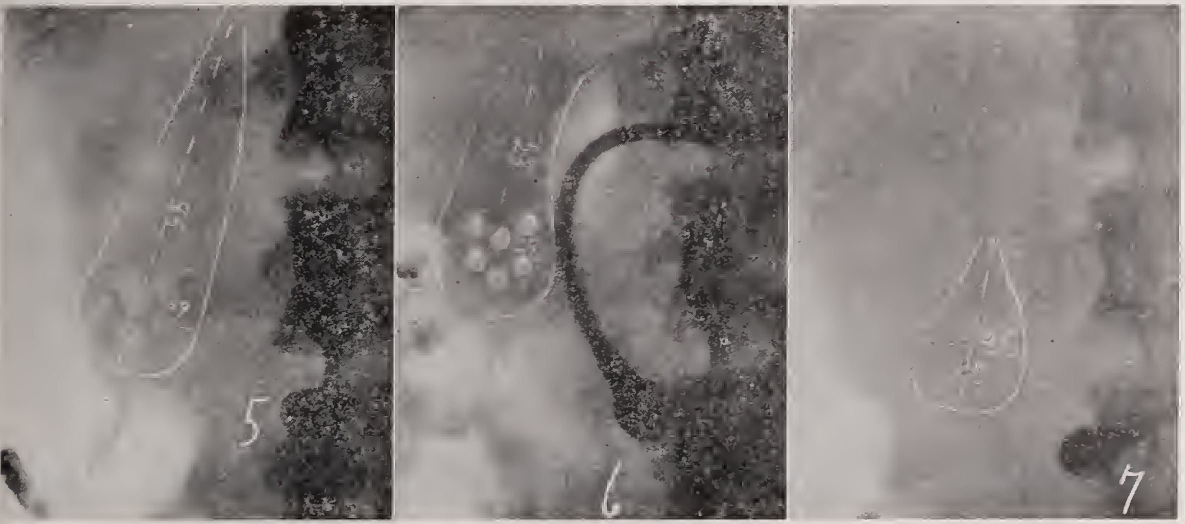
1. Shows fourteen hour film shadow of gallbladder. 2. Two hours after egg and cream by mouth. There is little change. 3. One hour after egg and cream intraduodenally. Shadow is smaller. 4. One hour later. Gallbladder shadow much reduced in size. Dark bile 175 cubic centimeters.

Methods.—Besides my own clinical investigation and observation I have controlled one hundred and four drainages by simultaneous oral or intravenous administration of tetraiodophenolphthalein. In 1924, I followed Eppinger's work in Vienna in which duodenal drainage was practiced on a patient during an abdominal operation. With Rothberger in Vienna in 1925 I did the same work on dogs. Seventy-two patients under treatment have been controlled by the gallbladder visualization method of Graham. Eight patients under treatment have been controlled by blood plasma cholesterol estimations. In five patients the iodin content of A, B and C fractions was titrated after the Graham test.

Drainage and cholecystography.—In one hundred and four patients this combined method was used. This work was carried out entirely in my own office by my own technicians and myself. Some were given the tetraiodophenolphthalein intravenously, three grams in one hundred cubic centimeters of physiologic sodium chlorid solution and some received it by oral administration in salol coated capsules, formalin treated capsules and by the Fantus colloidal method.

In the examination of each patient the technique—target distance, central ray focus, exposure time, position of patient and development—was exactly the same throughout the examination. In some the duodenal tube was passed before the first picture and in some just after the first exposure.

The first cholecystogram was taken fourteen hours after the dye was given and another each hour thereafter until the gallbladder was empty or until six hours had passed. In these one hundred four patients the gallbladder was plainly visualized and normal in appearance but stones were present in seven. Others in whom the gallbladder could not be clearly seen in the film were excluded and also those in whom (for various reasons) the tube did not pass into the duodenum. In sixty-eight of these cases one hundred cubic centimeters of 33% magnesium sulphate solution was injected to stimulate the bile flow. In thirty-six the Boyden meal was given. In eleven after the B bile had ceased to flow following magnesium sulphate, egg and cream was injected and in a few of the others (eight in all) peptone, olive oil or hydrochloric acid was used after the magnesium sulphate. In the remaining forty-nine magnesium sulphate solution 33% was repeated. In forty-two of those stimulated by magnesium sulphate the gallbladder shadow had disappeared before four hours, in seven before five hours and in the other nineteen the shadows were reduced from one-third to one-half by six hours. In the thirty-six receiving the Boyden meal all but two were empty by the end of the third hour and the two were about one-half empty in six hours. In the remaining eight, after magnesium sulphate, two received peptone and no change followed, four with olive oil were empty in four hours and two with dilute hydrochloric acid were slightly decreased in four hours. Egg and cream was given after the hydrochloric acid and peptone and in two hours the shadow was decreased about one-half. Solutions were not given by mouth but all were injected through the duodenal tube. In summary, in every case the gallbladder was diminished in size and the conclusion is that egg and cream is the best evacuant and then magnesium sulphate. The other three substances were not injected often enough to arrive at any conclusion regarding them. This is of no import as the problem was to learn whether the gallbladder emptied by the transduodenal method described.



5. Fourteen hour film shows radio-translucent stones. 6. One hour after egg and cream intraduodenally. 7. One hour later. Shadow much reduced and stones not showing. Dark bile 90 cubic centimeters.

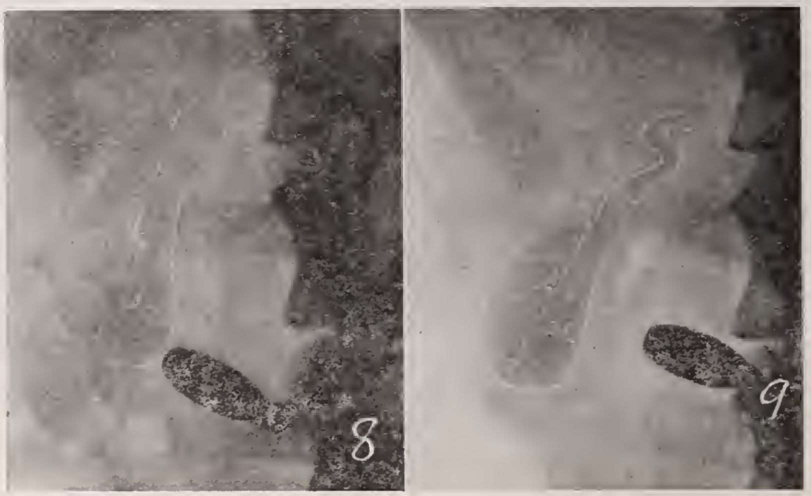
Drainage with gallbladder in view.—Eppinger in the Wenckebach Clinic in Vienna in 1924 was kind enough to let me see a patient who was having an abdominal operation under a local anesthetic. The duodenal tube had been inserted before the operation. Cream was injected into the duodenum and the gallbladder distinctly decreased in size.

Drainage in animals.—With Rothberger in the Pathological Institute in Vienna in 1925 I did the following work: The abdomen of the dog was opened under a local anesthetic. Magnesium sulphate 50% solution was introduced into the duodenum in two different cases and the gallbladder decreased in size. Bile aspirated from the gallbladder and from the duodenum were exactly the same in appearance in these cases. In two more cases carmine was injected into the gallbladder and was recovered from the duodenum following the foregoing technique.

Influence of medical drainage on plasma cholesterol.—The cholesterol content of the plasma is directly affected by the food intake so in the following experiments the cholesterol intake was kept as constant as possible.

In stasis in the biliary tract the blood plasma cholesterol is usually increased and this may be with or without stones. Fourteen patients suffering from a chronic cholecystitis with an increase in the plasma cholesterol were selected for this experiment. Only eight completed the experiment and the results in these are here reported. The chemical work was done in the chemical laboratory of Professor Thompson at the University of Nebraska and the technique elaborated by Bloor was followed.

The normal blood plasma cholesterol content is, according to Bloor, 220 to 240 milligrams per 100 cubic centimeters. In these eight cases the plasma cholesterol varied from 314 to 520 and the average was 436. In seven of these patients it gradually decreased until the average was 224 at the end of six weeks. The lowest was 218 and the highest was 236. Two drainages a week were done in each case. In the eighth patient the cholesterol varied from 316 to 344 but her condition was complicated by arteriosclerosis which is one of the causes of an increase in blood cholesterol. These patients received no other treatment but transduodenal drainages.



8. Fourteen hour film. 9. One hour after magnesium sulphate intraduodenally. It was empty one hour later. Dark bile 80 cubic centimeters.

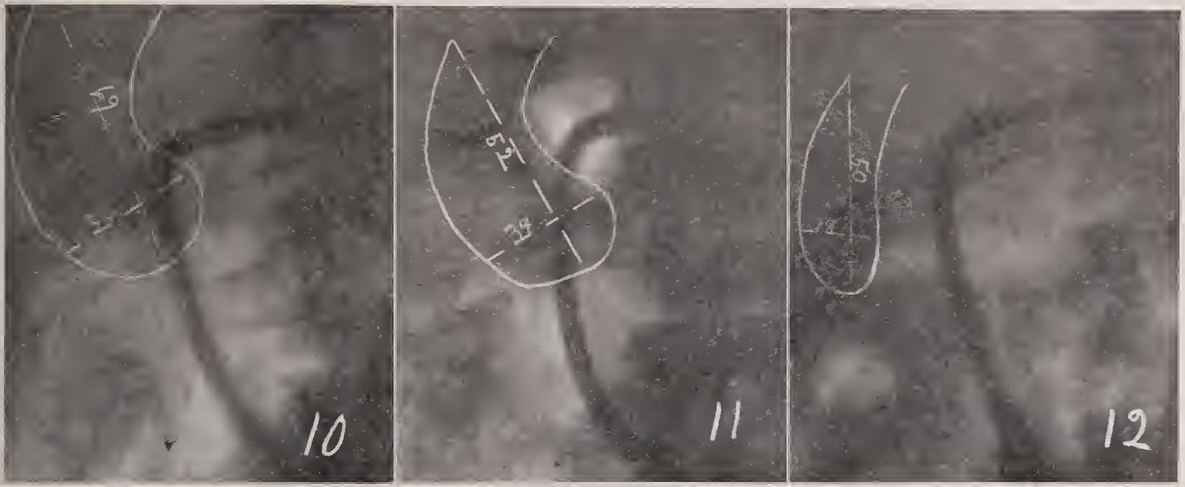
Gallbladder visualization before and after a course of drainages.—Seventy-two patients in whom the gallbladder evacuated slowly by the Graham test or did not fill completely or not at all were retested after four and eight transduodenal drainages. In the first series after four drainages, twenty-eight emptied in normal time. After eight drainages fifty-four filled completely and emptied within four hours after the Boyden meal. Eighteen partially filled or emptied slowly so were not considered as returned to normal.

If function is a criterion of the condition of a viscus then these fifty-four gallbladders were restored to normal. This is over 75% restoration to normal function. The bile flow increased in every case, pus and stained and clumped epithelial cells disappeared in each of these fifty-four patient's A, B and C biles.

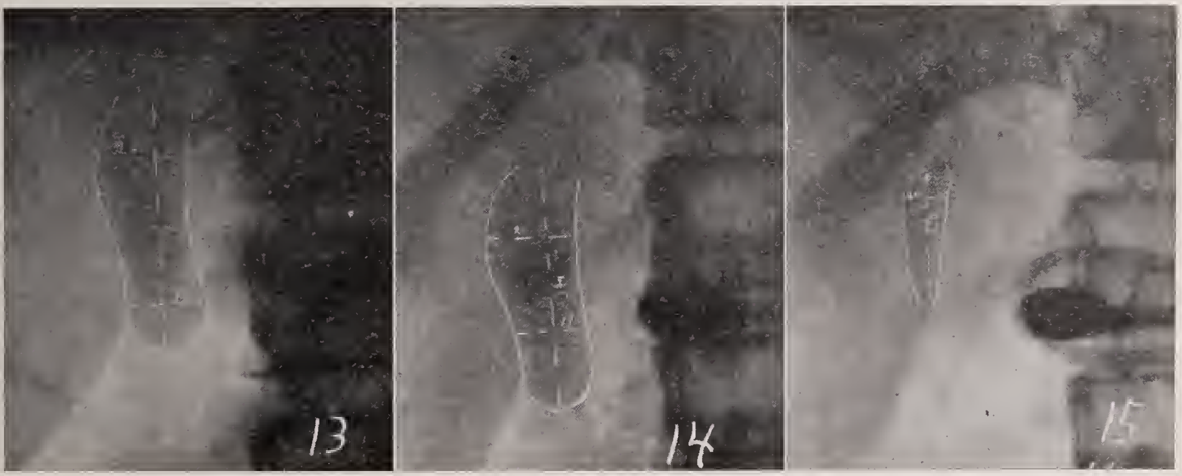
The recovery through the duodenal tube of dark thick bile was always accompanied by a decrease in the size of the gallbladder shadow and even in its disappearance. When no dark bile is recovered, even though a large amount of yellow bile appears, the gallbladder shadow is either absent or if present does not decrease in size. Drainage through the duodenal tube empties the gallbladder much more rapidly than anything given by mouth.

Iodine in fractional biles after gallbladder visualization: Following the idea of Lake, after the Graham test, A, B and C fractions of bile recovered by duodenal drainage in five cases were tested quantitatively for iodine. In all these the gallbladder shadow was dense and clearcut in outline. The bile was normal in every respect and the gallbladders were believed to be normal. In the A biles the iodine averaged 2.6 milligrams per cubic centimeter of bile, the B biles averaged 8.8 milligrams and the C biles averaged .78 milligrams. The iodine in the first biles ranged from 1.9 to 3.6, in the dark biles from 6.2 to 9.6 and in the light yellow bile from

.7 to .97 milligrams in one cubic centimeter. This shows the dark bile contains four times as much iodine as the first bile and about twelve times as much as the last bile. This indicates that the B bile and gallbladder bile are the same.



10. Fourteen hour film. 11. One hour after magnesium sulphate intraduodenally. 12. One hour later gallbladder shadow much reduced in size. Dark bile 95 cubic centimeters.

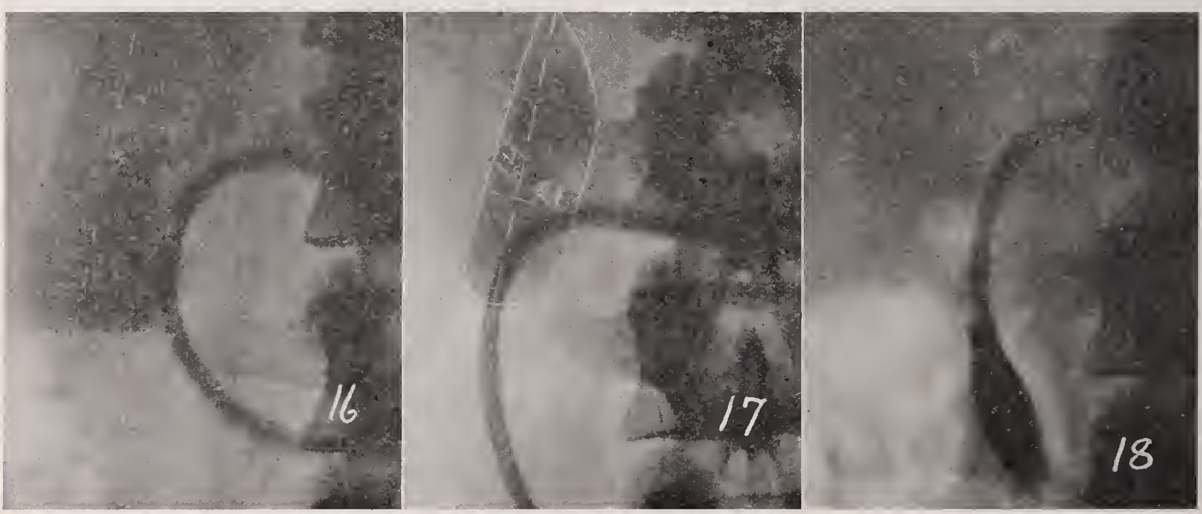


13. Fourteen hour film. 14. One hour after magnesium sulphate intraduodenally. 15. One hour later. Gallbladder shadow much reduced in size. Dark bile 85 cubic centimeters.

Contraction and evacuation of gallbladder by secretin.—I have refrained from quoting any of the voluminous literature concerning gallbladder drainage but the work of Ivy, Professor of Physiology, Northwestern University Medical College, seems to me to be of special importance in proving the gallbladder does contract. He prepared purified solutions of secretin. In cats a cannula was placed in the gallbladder through a small opening in the fundus and through this communication the intra-gallbladder pressure was found to increase for one-half to one hour after injections of secretin. This also happened when the cystic duct was tied off. In another series the gallbladder of dogs was filled with lipiodol then intravenous injections of "secretin" every ten minutes for one hour practically emptied the gallbladder in the course of an hour in some dogs and in others one-third to one-half of the contents was evacuated in the same time. These changes were noted under the fluroscope and in the roentgrams. In one dog the gallbladder was visualized by injecting tetraiodophenolphthalein. Secretin caused the gallbladder shadow to decrease approximately one-fourth in size in one hour. These observations establish beyond doubt that a highly purified extract of intestinal mucosa will make the gallbladder contract.

Mechanics of drainage.—The general mechanics of the bile flow is simple. The secreted bile passes through the hepatic ducts into the common ducts and if the ampula of Vater is open it passes into the duodenum but if closed the pressure increases in the common duct till the bile is forced into the gallbladder. The gallbladder is normally a bile concentrating organ thus the pressure is being constantly decreased in it so the flow is consequently toward it. After a meal the sphincter of Oddi relaxes, the bile flow is then toward the duodenum thus lowering the pressure in the common duct which is followed by a flow from the gallbladder and the hepatic ducts into the common duct. In this paper the illustrations and data show (if the biliary tract is patent) that transduodenal drainage repeats the latter physiological drainage into the duodenum from the entire biliary tree.

Drainage as an aid in diagnosis.—Lyon has assumed the A bile is mostly from the common duct, B bile which is usually dark and thicker is from the gallbladder and the C bile, a thin yellow secretion is directly from the liver.



16. Fourteen hour film. 17. One hour after magnesium sulphate intraduodenally. 18. Two hours later. Gallbladder shadow disappeared. Dark bile 135 cubic centimeters.

In my first paper as to the value in diagnosis I was not convinced this method was of any value but with greater experience I am now satisfied it is a great diagnostic aid in diseases of the duodenum and the biliary tract. I do not feel this method should be used alone but only in conjunction with a complete physical examination, gallbladder visualization and other proven methods.

Duodenitis.—Pus cells, bacteria in wet and stained smears, epithelial cells in large numbers and chemical changes in the duodenal secretions are present in this disease.

Duodenal ulcer.—Red blood cells are always present in an active ulcer.

Choledochitis.—If the duodenal contents are normal and the A bile contains inflammatory products (pus cells, stained epithelial cells, bacteria in smears) there must be an infection in the common duct.

Cholecystitis.—When the duodenal and common duct contents are normal and the B bile contains pus cells, desquamated stained epithelial cells, organisms in smears, increased proportional cholesterol contents and is thick and viscid, a diagnosis of gallbladder infection is justified. If in the cholecystogram the gallbladder is not visualized or the shadow is irregular in outline, varies in opacity and by the transduodenal technique empties slowly or not at all there is no doubt as to an infection in the gallbladder.

Cholelithiasis.—Stones in the gallbladder cannot be diagnosed by this method alone but with simultaneous cholecystography the correct diagnosis is arrived in nearly 100% of the cases.

Hepatitis.—If the A and B biles are normal and if the pus cells and thickened and clumped particles are present in the C bile then hepatitis with a cholangitis is usually present.

Closure cystic duct.—If, after three drainages, no B bile is recovered and by simultaneous cholecystography the gallbladder shadow does not appear it is safe to conclude the cystic duct is not patent—either closed by a stone, by stricture or by a new growth inside or outside the duct.

Since cultures of the first one hundred biles recovered showed organisms in each, I have discontinued culturing the secretions in ordinary cases. The flakes and shreds in the bile are transferred directly to slides for microscopic study and pathologic products, if present, will usually be found in these masses.

Value of drainage in treatment.—In the treatment of duodenitis, infections and stasis of the common duct, gallbladder and hepatic ducts and in hepatitis, duodenal drainage surpasses in my experience any one method. However, its efficacy is increased when diathermy and the proper diet with the removal of all abnormalities are prescribed in conjunction with it. It will not remove gallstones but it will relieve any accompanying infection if the gallbladder can be drained. However, gallstones are present in many people who never had an abnormal abdominal symptom. In work with Erdheim of Vienna, I saw at least fifteen hundred autopsies and in many cases symptomless gallstones were found. He stated that in the one hundred fifty thousand autopsies he had done, gallstones which had caused no complaint were present in approximately 2%. He said many times, "If the stones are too large to enter the cystic duct they seldom cause trouble." Those with gallstone pains are those who have a complicating cholecystitis or the small stones are passing through the cystic or common ducts or are clogging them. I have many patients with gallstones who have never suffered any pain whatever. Gallstones without symptoms or accompanying infection are not indication for treatment of any kind. In the past too much emphasis has been laid on presence of calculi. Monographs have been written on gallstones. But calculi are incidental and not essential to gallbladder disease. Stones may lead to compelling attention but they have distracted attention from the essential problem—the gallbladder and bile ducts. Stones in the common or cystic duct or occlusion of the ducts from other causes, malignancy, adhesions or gangrene, require a purely surgical treatment but medical drainage after the operation would shorten the convalescent period in that it would overcome stasis in the biliary tract.

The greatest friend of infection is stasis with the resulting formation of a natural incubator while good drainage of any secretion or excretion is the greatest foe of infection. Stasis in any secreting organ is usually the principal cause of infection in that organ and to cure the disease, the stasis must be overcome.

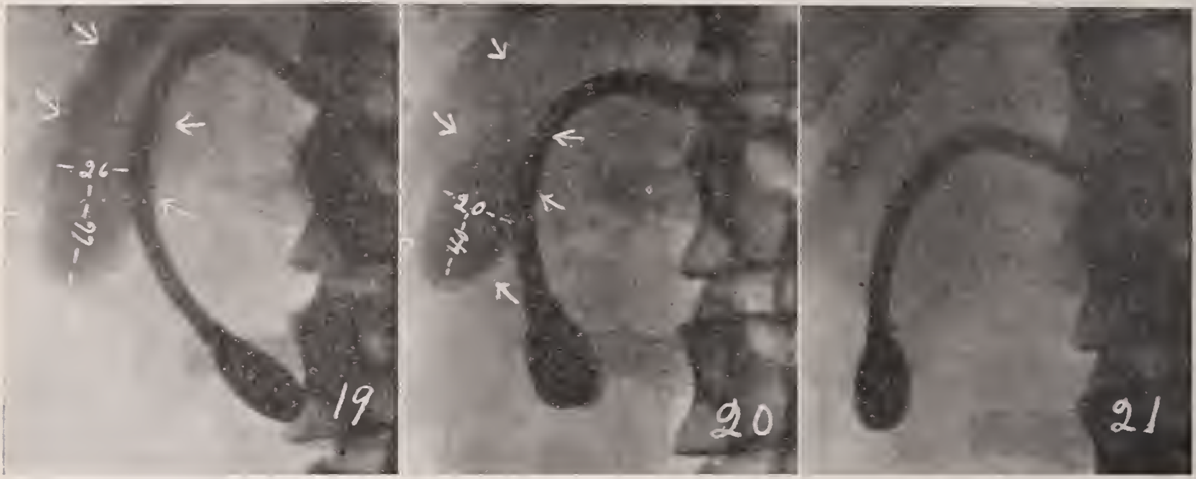
In my experience in the non-surgical cases, patients treated by medical drainage will surpass those treated surgically in the time of convalescence, the sequellae and in the number of recurrences.

Surgical drainage compared with medical drainage. In the surgical ranks many have said that infection in the gallbladder often causes a thickening of this organ and that even though medical drainage may empty the gallbladder it does not relieve this thickened wall (principally the mucous membrane). By a perusal of the literature on surgery of the gallbladder one is struck by the lack of unanimity as to the relative value of removal of the gallbladder or just drainage through the abdominal wall. In talking to surgeons and from the articles in English, German and French we find there is about an equal division in the conclusions as to the value of cholecystectomy and cholecystostomy. Recently the surgeons have been swinging toward the belief that the gallbladder should not be removed unless it is functionless. Outside of incising or excising the gallbladder ,surgery does no more than drain this organ and the bile ducts and this for a period of one to two weeks. There is no other surgical method of clearing the infection. Now if this is true how can drainage through a tube in the abdominal wall plus an operation with its resultant weakening and abdominal adhesions be preferred to a method which does the same without an operation?

What is the mechanics of surgical drainage?—Simply by putting a tube in the gallbladder or ducts, the bile is drained from this organ, the pressure is lowered and the bile in the ducts flows toward the area of lowered pressure. This is the mechanics of the non-surgical drainages but the pressure is lowered physiologically in the common duct and the flow is toward this duct and into the duodenum. Now, many thinking surgeons do and others must admit that if the biliary tract is patent it can be drained by the transduodenal method as the accompanying illustrations will show.

I believe that a complicated cholelithiases, malignant disease, occlusion of the ducts and gangrene of the gallbladder require surgical treatment but in infections of the biliary system with no occlusion I feel I can show beyond doubt the non-surgical method drains the entire biliary tract, has the same mechanical effect as the surgical and it has the advantage of not subjecting a patient to an operation, with its surgical, nurse and hospital fees, the pain of an operation, the convalescent period and often with many embarrassing sequelae. Gallbladder drainage must finally be through the common duct whether the treatment is surgical or not, so why not first as last?

I have records of forty-six patients who were advised by surgeons that a gallbladder operation was absolutely necessary but by medical drainage they have been restored to normal. One of these has had no treatment since 1921 and has had no recurrence of the cholecystitis. The time after treatment of the others varies from one to six years.



19. Fourteen hour film. 20. One hour after magnesium sulphate intraduodenally. 21. One hour later. Gallbladder shadow has disappeared. Dark bile 100 cubic centimeters.

CASE REPORTS

Case No. 1.—Female, 67 years of age. July 11, 1927.

Past history: has been well until six years ago when she developed dizzy spells with attacks of nausea and vomiting and severe headaches. These lasted three to four days and have gradually increased in severity and number. She sees double at times and her eyes tire easily. Her heart runs fast and "jumps" at times. She complains of a lump in her stomach which becomes worse with any food. Has been constipated most of the time. Blood in stools often. Urination is normal but the urine is very dark. Has been gradually losing weight. Menstruated, last, nineteen years ago. Skin is yellow at times.

Present trouble: Attacks of dizziness, vomiting, headaches, seeing double, rapid heart, lump in stomach and dull pain in upper abdomen. She is very nervous, worries about her condition a great deal, has no appetite and is losing weight. The vomitus is yellow and tastes bitter. She eats nothing during the three or four days of the attacks which are coming about once a week now. She is so dizzy she cannot stand up. If she lies down and does not move her eyes, the feeling of swaying stops. She is very weak and walks with assistance only.

Examination: General appearance: Very nervous, walks with difficulty due to weakness and dizziness. Has the appearance of having lost a great deal of weight. Conjunctivae yellow. A root of a tooth with an area of absorption about the lower incisor area is seen in the roentgram. Tenderness in the gallbladder region, bile in the urine and the skin has a yellow cast.

Biliary tract.—A, B and C biles recovered by the transduodenal method contain pus, stained epithelial cells and streptococci in each specimen. The B bile is black and thick.

Gallbladder visualization.—Fourteen hours after the oral administration of tetraiodophenolphthalein there is no shadow present in the gallbladder region. At a second examination the gallbladder fills irregularly and is partially filled in twenty-four hours after the Boyden meal. The roentgram shows no opacities in the gallbladder area.

Comment.—Diagnosis of chronic infection of the gallbladder and bile ducts was made on the tenderness in the gallbladder region, yellowness of the conjunctivae and skin, bile in the urine, pus, epithelial cells and bacteria in each specimen of recovered bile and partially filling of the gallbladder with slow emptying.

Treatment.—She was put on a low carbohydrate diet, diathermy, two thousand milliamperes through the gallbladder was given twice a week, the tooth root was extracted, transduodenal drainage of the gallbladder twice a week was followed for twelve weeks. In three weeks the dizziness had disappeared and she was gaining in weight and strength and has had no nausea or vomiting since. She has gained eighteen pounds in weight, eats anything she wishes, has no headaches and feels as well as she did six years ago before the developing of the foregoing symptoms.

Outcome.—At the end of twelve weeks, by the Graham technique, the gallbladder filled normally, was clear cut in outline, of equal opacity throughout and emptied in three hours after the Boyden meal intraduodenally. The bile was normal to all tests.

Case No. 2.—Female, 49 years of age. June 29, 1927. Has had pain in the gallbladder region during the last two years. These are referred into the right shoulder region and are accompanied by nausea and vomiting and severe headaches. The eyes become yellow and the urine very dark. She is tender over the upper abdomen for several days after each attack.

Examination reveals a tenderness in the gallbladder region with some rigidity of the right rectus muscle in the same region. The heart rate is 96 but is otherwise normal. The stomach, after the barium meal, is one-half full in six hours. Examination of the stomach by the Rehfuss method shows the free hydrochloric acid to vary from 8 to 12 and the total acidity from 32 to 41. In the duodenal secretions pus cells and staphylococci are present in large numbers, in the A, B and C biles the same substances are present. Stained epithelial cells are found in the B bile which is very thick and dark and about five cubic centimeters in amount. White blood count is 11,600. Gallbladder visualization by both the intravenous and oral method shows no gallbladder shadow. No opacities in this region are seen in the roentgram.

Diagnosis.—Chronic cholecystitis with an acute exacerbation.

Treatment.—Non-surgical gallbladder drainage twice a week for ten weeks. Diathermy was used through the gallbladder region after each drainage. The B bile gradually became thinner, increased in amount and the pus cells and bacteria decreased. At the end of ten weeks the gallbladder shadow was normal in outline and the gallbladder emptied completely within four hours after magnesium sulphate 33% intraduodenally, the yolk of an egg and four ounces of cream. She gradually increased in weight, from 107 to 116 pounds. She has had none of her former attacks up to the present time and has had no headaches since then.

Case No. 3.—September 21, 1926. Female, 63 years of age.

Past.—Attacks consisting of nausea, vomiting, pain in the upper right abdomen referred to the right scapula and relieved only by morphine. For several days after these attacks there is soreness in the upper right quadrant. The conjunctivae and skin have been yellow, the stool light in color and the urine dark and scanty. She complains of a great deal of "gas" which makes her bloat considerably. She was advised by a surgeon that she had gallstones and that an operation was necessary.

Examination: Blood pressure, systolic 158, diastolic 90. There is tenderness and rigidity in the gallbladder region. The urine is dark and bile is present. Stomach contents by the Rehfuss method shows a constant decrease in the free hydrochloric acid and total acidity. Gallbladder visualization: No shadow was seen in the roentgrams on three different occasions. Two tests were by the oral route and in the third the tetraiodophenolphthalein was given intravenously. The drainage through the duodenal tube recovered 25 cubic centimeters of A bile, no B bile and 125 cubic centimeters of C bile. Clumps which contained pus and stained epithelial cells were present in each specimen.

Diagnosis.—Infection of the entire biliary tract.

Treatment.—Biliary tract drainage by the duodenal method twice a week for seven weeks then once a month for four months. After the third drainage B bile was recovered in increasing amounts and gradually became normal in appearance and contents. At the end of three months she was normal physically with no abnormal symptoms in the gallbladder region. Gallbladder visualization was normal in every respect. She has had none of her former symptoms since then.

Case No. 4.—December 26, 1925. Female, 49 years of age.

Chief complaint.—Pain in right upper quadrant of abdomen, under right scapula and passing into the right shoulder. This has been present for the last three years and recently has gradually become more severe. The pain now comes in paroxysms with vomiting, sweating, yellowness of the skin and eyes.

Examination.—Reveals a tenderness in the gallbladder region and pus and staphylococci in each fraction of the bile recovered. The Graham test shows an irregularly filled gallbladder which is about one-half empty in four hours after the Boyden meal and still retains some of the dye at the end of twenty-four hours. There is bile in the urine. Conjunctivae are yellowish and the skin is slightly yellow and abrasions due to scratching are present. She has an infectious arthritis of the fingers and wrist joints. Pyorrhea is present.

Diagnosis.—Infection of the entire biliary tract.

Treatment.—Transduodenal drainage was done twice a week until February 6, 1926. The bile fractions gradually increased in amount, the B bile became thinner and of a lighter color. Since May, 1926, she has had none of her former attacks up to the present time. The arthritis has disappeared without any local treatment. She was injured in an automobile accident October 19, 1927 but this did not bring on any attacks of her old trouble.

Case No. 5.—Male, 52 years of age.

I saw him at home on the above date and he complained of a sharp pain in the upper right quadrant of the abdomen. He was in great distress and there was a rigidity and tenderness in the same quadrant. One-half a grain of morphine was necessary to relieve this pain. He said he had been feeling drowsy and listless for a long time before this. A diagnosis of stone in the common duct was made. He was referred for surgery and a stone was found blocking the common duct. This was removed. However, following this his skin and eyes became yellow. He was losing weight, the stool was whitish and bile was present in the urine. Pus and stained epithelial cells were present in the A, B and C biles. The Graham test showed a "patchy" shadow which did not disappear entirely in six hours after the Boyden meal. He was given transduodenal drainages and in three months had gained thirty-five pounds in weight which was twenty-five pounds more than he had ever weighed before. He was feeling normal in every way and has continued so up to the present time.

CONCLUSIONS

That the gallbladder as well as the rest of the biliary tract can or cannot be drained transduodenally by stimulation of the duodenal mucosa is the result attempted in the foregoing work. This effort covers a period of five years of office practice.

It has been shown the gallbladder empties by this method through the following data; (1) by the resemblance of the B bile recovered to the bile in the gallbladder in man and animal through direct observation; (2) by the emptying of the gallbladder as shown by the disappearance of the gallbladder shadow (Graham Test) after duodenal stimulation by magnesium sulphate, egg and cream and other substances; (3) by seeing the collapse of the gallbladder in man and animals after intraduodenal stimulation; (4) by injecting carmine into the animal gallbladder and recovering it in the B bile in the duodenum; (5) by return to normal function of the gallbladder as shown by gallbladder visualization method of Graham; (6) by a reduction in blood plasma cholesterol after a course of these treatments; (7) by the high proportion of iodine in the B bile recovered after the administration of tetraiodophenolphthalein; and (8) by the increased amount of B bile and the disappearance of pathologic contents after the treatment, in patients affected by biliary tract disease.

It is of value diagnostically by affording direct examination of the fractional portions of the bile.

It is of value in treatment of biliary tract diseases which have long been considered to belong in the surgical domain.

It overcomes biliary stasis when organic obstruction is not present and thus prevents many surgical operations with their high cost, pain, loss of time and with their long train of sequellae.

It will not remove gallstones, fibrotic gallbladder disease or organic obstructions of the cystic or other biliary ducts.

In conclusion I feel that I have proved beyond any doubt that transduodenal drainage will drain the gallbladder as well as the rest of the biliary tract and know those who will give this method a fair trial will agree with the foregoing statements.

Finally, I believe this method of medical treatment of biliary disease will, after the physician has had the proper training, find a valuable place in the treatment of many diseases of the biliary tract.

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UNDULANT FEVER*

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About the middle of the decade 1880-1890, a decade in which the first pathogenic bacteria were isolated and their relationship to disease established, David Bruce obtained his medical degree from the University of Edinburgh. At this time he was without funds and engaged to be married to a young woman also without financial resources. Neither of them was willing to postpone marriage until Bruce could establish a practice. He therefore joined the British Army Medical Service on a salary of one thousand dollars a year.

Bruce was ordered to report to the English garrison on the Island of Malta in the Mediterranean Sea. On this Island he spent his honeymoon with his newly-wedded bride. Bruce was energetic and curious, more interested in a disease peculiar to the Island than in the routine duties of the garrison. With very little knowledge of the then new science of bacteriology, and with almost no equipment, he set up a laboratory in a dilapidated shack, determined to discover the cause of the mysterious disease, Malta fever, as it was then known.

Undulant fever has been definitely known for many centuries. It existed in ancient Greece. Hippocrates, in his work on epidemics, describes a protracted fever which sometimes continued for 120 days or more, characterized by exacerbations and remissions. Hippocrates writes:

> "Apyrexia at times, at others not; for if the fever intermitted and was alleviated for a little while it immediately relapsed again."

From the time of Hippocrates to the beginning of the eighteenth century there is no mention or description of any disease which could be identified with undulant fever. There is little reason to doubt, however, that it has existed in Greece and other lands around the Mediterranean Sea, and very probably in other places as well, from the time of Hippocrates to the present. Although Hippocrates first described this disease with such accuracy as to leave no doubt that he was portraying the symptom complex of the present day undulant fever, it is, nevertheless, extremely probable that it existed many centuries before his era.

Cleghorn, in his classical monograph on the fevers of Minorca written in 1751, describes one in which there was an irregular, incurable, and continued fever, characterized by numerous relapses and excessive perspiration. In a report on an autopsy of one of his cases, he states that the spleen was "so excessively soft and rotten, that it had more the appearance of congealed blood wrapped in a membrane than of the original part."

The importance of undulant fever was not recognized until the latter part of the eighteenth century when many cases in the Island of Malta gave it the name of Malta fever which it retained until comparatively recent times. The discovery that the disease was widespread and not limited to the Island of Malta seemed to demand a more descriptive name and it has, therefore, been designated undulant fever in accord with its most characteristic symptom. The disease was first accurately described by Marston, who suffered from it, in 1859. Previous to this time it had been confused with malaria, typhoid, typhus, and other fevers. Marston very clearly differentiated it from these fevers, particularly from typhoid and typhus fevers. Veale in 1879, from his studies of soldiers invalided home from Mediterranean stations, confirmed

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*Read before the Lancaster County Medical Society, March 19, 1929.

Marston's claims and still more clearly differentiated it from malaria, typhoid, typhus, remitting, and other fevers. From his study of the symptomatology and pathology of the disease, Veale established undulant fever as a specific disease.

Bruce first saw the organism which causes undulant fever in material which he removed from the spleen by means of a sterile trocar. The man from whom he secured his material had died following an illness of fifteen days. Since he was not allowed to perform an autopsy, he obtained some of the splenic pulp by making a puncture through the body wall. In the fragments of tissue, Bruce found enormous numbers of single microorganisms which he described as micrococci and named *Micrococcus melitensis.* Later investigations have shown that this organism is a short bacillus and it is, therefore, frequently called the coccobacillus of undulant fever. Bruce isolated the organism a few years later from cultures grown on agar. In hanging drops from growths on some culture media, it has a coccus-like appearance, the individual cocci having a diameter of 0.3 to 0.4 of a micron. Grown on certain other media, for example, in fresh blood cultures, it takes on a very evident bacillary form. The rods may attain a length of 0.8 to 1.8 microns with a width of 0.3 to 0.4 of a micron. They are arranged singly and in pairs, less frequently in short chains, and in fluid media one or two weeks old long threads may be found.

Motility.—The organism does not have any real motion. It has, however, an active Brownian motion.

Staining properties.—It stains readily with the usual simple aniline dyes. It is Gram negative.

Cultural characteristics.—It grows rather readily on all the ordinary solid and liquid culture media. Development is slow, several days being required for the appearance of a visible growth. The optimum reaction of the medium should be from 7.2 to 7.6 pH. Its resistance is greater to alkalies than to acids. It grows between the temperatures of 6° to 45° C. Its optimum temperature is 37° C. Even up to 42° C. growth is very little modified. Between 42° to 45° C. growth is markedly retarded and involution forms appear. Still more markedly is growth retarded at the lower temperatures. No growth takes place below 6° C. nor above 45° C.

Oxygen requirements.—It grows best in the presence of free oxygen. Growth is slow under anaerobic conditions. Descriptions of other more specific cultural relations and characteristics are not described since they may readily be found in all standard works on bacteriology.

Pathological changes.—Since the death rate in undulant fever is low, there are relatively few records of autopsies in undulant fever. However, sufficient data have been collected to make it evident that undulant fever is accompanied by few gross pathological lesions. Only three organs, all in the abdomen, constantly show gross changes, namely, the spleen, the liver, and the lymph glands, particularly the mesenteric and the retroperitoneal lymph glands.

Spleen.—The spleen is always enlarged. Its weight varies from about 600 grams in acute cases to 2,500 grams in cases which run a prolonged chronic course. Pepere has recorded a case in which the dimensions of the spleen were 27x13x9 centimeters, its weight 750 grams. Its color is a very dark red. In some areas it is almost black. The capsule is firm. On section the pulp is soft and doughy, of dark red color, and permeated with numerous hemorrhagic infarcts which are drier and more compact than the rest of the parenchyma. On this account the surface appears irregularly granular. In many instances the whole spleen appears like a clot of blood lying within the capsule. The follicles are usually seen with difficulty on account of the amount of blood present.

Liver.—As a rule the liver is increased in size. According to Hughes its weight fluctuates between 1,400 and 2,700 grams. It may be dark red or colorless, with various gradations between these two extremes. The appearance of the cut surface varies in a like manner. Areas of congestion alternate with pale anemic zones. The structure of the lobule is for the most part clearly outlined.

Lymph glands.—The lymph glands are more or less swollen but as a rule compact. Sometimes they are soft as a result of suppurative foci. Such foci occur particularly in the mesenteric glands. The substance of the glands is for the most part rose red, the color often extending to the injected capsule. On section the parenchyma is found to be soft. The enlargement and softening of the glands is not due to hyperplasia of the follicles or medullary cords. Some of the follicles and cords show atrophy. In these areas the lymphocytes show all stages of degeneration—karyolysis and karyorrhexis. The swelling is chiefly due to congestion. The sinuses are dilated through the pressure exerted by the swollen and desquamated endothelium. In many instances they are filled with blood. Numerous necrotic foci are distributed throughout the glandular tissue.

Bone marrow.—The bone marrow is sometimes normal in appearance; at other times it may be intensely hyperemic. Microscopically, the same retrograde changes are seen as are present in the spleen and lymph glands. Especially may granular and amorphous necrotic foci be observed in which nuclear fragments are scattered. No signs of karyokinetic cell changes are to be seen in the surviving living cells.

Intestinal tract.—Small hemorrhages may occur in the mucous membrane, especially in that of the duodenum. Superficial ulcers, catarrhal in type, are occasionally present.

Kidneys.—The kidneys are usually markedly congested. As a rule no observable degenerative changes are present in the parenchymal cells. There may be minute foci of small round-celled infiltration. During the entire course of undulant fever, the kidneys functionate normally or nearly so. In individual cases large white kidneys or an acute parenchymatous nephritis may be observed.

Heart, nervous system, and other organs and tissues.—As a rule all these organs and tissues have a normal appearance. In individual cases changes may occur. Arthritis, orchitis, and various suppurative complications may occasionally be observed.

In experimental infections of some animals, the guinea pig for example, granulomatous nodules or diffuse infiltrations consisting of endothelial cells, similar to tuberculous nodules, are occasionally seen. In man similar nodules containing epithelioid cells have occasionally been found in the lymphoid splenic follicles. Injections of living cultures of the *Brucella melitensis* into the skin of goats are not infrequently followed by nodular formations in which epithelioid, lymphoid and giant cells are observed. The central parts of these nodules may finally necrose, presenting a picture comparable with the other granulomata. Gilbert and Coleman have recently reported a case of undulant fever, probably traumatic in origin, which would not have been recognized because of its mildness, had it not been known that the patient had sustained an accident in the laboratory. The strain of *Brucella melitensis, var. bovine,* causing this infection, regularly produces tubercle-like lesions in guinea pigs.

Since the various types of *Brucella melitensis* have been obtained more or less uniformly from the blood of undulant fever, recovery of the germ from the different organs and tissues ought to be of frequent occurrence. It may be isolated in nearly all cases from the bile, and from the lymph glands and the spleen. It may often be isolated from the liver and the kidneys. As far as infection in man is concerned, the most important sources are the urine, milk, and milk products, of the domestic animals with which he comes in contact, since *Brucella melitensis* and the varieties *caprine, bovine, porcine, ovine* and *equine* are apparently the only members of the *Brucella* group which are found in human infection.

Domestic animals.—Goats, cows, sheep, horses, mules and asses are susceptible to both natural and experimental infection. The goat is the most important animal as far as natural infection is concerned. The cow is next in importance; sheep and swine appear to be much less frequently infected. In countries in which goats are not raised in any considerable number, as in the United States, cows are the chief source of infection.

Other animals.—Monkeys artificially infected through inoculation or by feeding develop a disease which is in all respects very similar to undulant fever in man. In rare instances guinea pigs have been infected spontaneously. They are easily infected artificially and the same is true of rabbits, rats and mice. There are no recorded observations of natural infections in any of the rodents except the guinea pig. Dogs and cats have apparently been responsible for infection in man in some cases. Fiorentini has grown a bacterium from the spleen of a hen suffering from an epidemic disease which he believes belongs to the Brucella group.

Undulant fever occurs in all parts of the world. It is apparently co-extensive with the geographical distribution of the domestic animals. How long it has existed in the United States is problematical. Since the symptoms are protean in many instances, particularly in infections of the milder type, it is probable that many cases have occurred in the past, and are occurring now, which have not been recognized. Undulant fever in the United States was first recognized and described by Craig in 1903. During that year a nurse on duty in a military hospital in Washington, D. C., contracted a disease which Craig diagnosed Malta fever. It was believed that the infection had probably resulted from nursing soldiers who had been invalided home from the Philippine Islands. In the same contribution Craig reported nine cases of undulant fever occurring in soldiers who were infected in the Philippine Islands.

In 1911 Ferenbaugh reported five cases of Malta fever occurring in May of that year in persons engaged in the goat raising industry along the Pecos River in Texas. Later in the same year Gentry and Ferenbaugh made a more extensive report of the disease in Texas and came to the conclusion that it was endemic. They investigated an endemic area extending along the Rio Grande River for approximately 300 miles and to the north for 90 miles, including the Neuces and lower Pecos River countries. Gentry and Ferenbaugh found that all the cases of Malta fever were restricted to the goat raising area. In every instance those infected had either drunk unboiled goat's milk or had been actively engaged in the goat-raising industry. The disease does not seem restricted by climate to any particular zone. It prevails at all seasons of the year. In 1922 Lake reported the first epidemic of undulant fever occurring in any city in the United States. It took place in Phoenix, Arizona, the source of infection being goat's milk from a single first class dairy. Holt and Reynolds conclude from their study of Malta fever along the Mexican border that the disease has existed in Texas for about forty years and for at least fifteen years in Arizona. They were not able to secure reliable data from which to estimate the length of time it has existed in New Mexico. The importation of goats from Mexico has been permitted for many years and it is probable that infected goats have entered these three states for many years. It is the belief of Holt and Reynolds that Malta fever is endemic along the entire Mexican border of Texas, New Mexico, and Arizona, and that conditions are favorable for the spread of the disease. They believe that many cases of Malta fever in man are overlooked through faulty diagnosis. On account of the difficulties encountered in diagnosing atypical cases, it is unfair to indict the skill of physicians attending the cases. They say that "in the southwest, Malta fever should always be suspected in long-continued fevers, unless the diagnosis is definitely that of some other condition."

The relationship of *Brucella melitensis,* causing Malta fever in goats and man, to *Bacillus abortus,* isolated by Bang in 1897, causing contagious abortion in cows, was definitely established by Alice Evans in 1918. Subsequent investigations have virtually proven the identity of *Brucella melitensis* and *Bacillus abortus* of cows and other domestic animals. This close relationship has led to the inclusion of all the strains in the genus *"Brucella"*. In 1925, Miss Evans worked with 68 strains obtained from several countries. From serological tests she concluded that they should be divided into not less than eight different groups. Five strains isolated from men in the United States belonged to the abortus variety. Keefer, in 1924, described a case of undulant fever in which the evidence presented absolute proof that the cause was the *Brucella melitensis, var. bovine.* Shortly after, cases were reported by Evans, Duncan, Huddelson, Carpenter and others. Since the discovery of the first case of undulant fever in the United States, due to the *Brucella melitensis, var. bovine,* by Keefer in 1924, many other cases have been diagnosed both in the United States and in other countries throughout the world. The importance of undulant fever in the United States is greater than is recognized at the present time, since it has hitherto been diagnosed infrequently. Statistics of its occurrence in most parts of the United States are *nil.* At the annual meeting of the American Public Health Association, held in Chicago during October, 1928, one entire afternoon was devoted to a symposium on undulant fever. At this session six papers were presented and discussed. Two epidemiological studies were also presented in a special session devoted to epidemiology. Hardy, State Epidemiologist of Iowa, presented a series of 83 cases. These reports were from a relatively small part of the United States, being confined to Connecticut, New York, Ohio, Washington, D. C., Michigan and Iowa. A few other states have reported a limited number of cases. However, a rapidly increasing number of cases is being recognized and diagnosed since the relationship of Bang's bacillus of contagious abortion to human infection has been established.

Symptomatology.—In domestic animals infection with the various strains of *Brucella melitensis* is usually without symptoms or if present they are mild in character. Abortion in cows, less frequently in goats and sheep, may be the only indication of infection. Bruce's original definition of Malta fever, "a disease of long duration, characterized clinically by continued fever, profuse perspiration, frequent relapses, rheumatic neuralgic pains, swelling of joints or orchitis; bacteriologically by the presence in the blood and organs of *Brucella melitensis,* or *Bacillus abortus*", is a pretty accurate description of the symptoms of the typical case of today. The onset of undulant fever has many symptoms similar to those seen in various other diseases, such as chills, headache, anorexia, and digestive disturbances. The more characteristic symptoms of the disease are: Profuse perspiration, usually constipation, muscular pains, insomnia and mental depression. Relapses are common and often accompanied by pains in the muscles, joints, and along the course of the nerves. Sometimes the joints are swollen and there is not infrequently a complicating orchitis. A typical case of Malta fever is characterized by a step-like elevation of temperature which usually rises to 103° F. by the fifth day. From this time on for from 12 to 15 days the temperature remains high, reaching 103° F. to 105° F. daily during the afternoon. In some severe cases it has reached 107° F. The pulse is not greatly increased in frequency, usually running between 80 and 90. The temperature now begins to fall and may continue to do so for two weeks or more when it often becomes normal. After a few days a relapse occurs in which the symptoms are usually less severe than in the preceding attack. Many relapses may occur before recovery takes place, and the disease may be long drawn out, not infrequently lasting for two or three years, sometimes for seven years or more.

Every repetition of an attack of fever weakens the patient and a marked anemia is always present in prolonged cases. The spleen is swollen and frequently painful. The joints, particularly those of the hip, knee, ankle, and shoulder, are swollen but usually without any redness. The characteristic pains of arthritis are present. Neuritis is common, the sciatic nerve being frequently involved. As might be expected in a disease with so protracted a course, complications of a varied and multiform nature may occur. In addition to the type described above, which usually lasts for about three months, other types are often described; the malignant form which begins abruptly with a high fever, runs a course similar to typhoid fever, often ending in death in one to three weeks; an intermittent type with gradual onset, mild symptoms and a protracted course, six months or more; an "ambulatory" type with very mild symptoms, which can only be diagnosed through isolating the germ from the blood or urine or by serological tests. The ambulatory case may be one of the most important means of transmitting the disease.

Diagnosis.—In most cases diagnosis from the clinical symptoms alone is difficult or impossible during the first month or six weeks of the disease, since the syndrome is incomplete before the end of this period. During this time the patient's signs and symptoms are usually mild and indefinite. They are of such a general nature as to furnish no basis for a differential diagnosis and might occur in almost any communicable disease. There may be lassitude, loss of appetite, constipation and vague pains of moderate intensity. In some cases recovery occurs before a charactertistic syndrome is developed. In others the symptoms increase in severity. The patient no longer feels able to pursue his customary occupation and goes to bed. By this time his temperature has usually reached 103° to 104° F. Headache, intense lassitude, excessive perspiration, constipation, pains in the joints, neuralgic pains, and sometimes orchitis and other less characteristic symptoms arise. Respiratory symptoms may appear at this stage. This should not lead to a diagnosis of influenza, since there are no respiratory symptoms during the first few weeks of the disease.

Undulant fever has often been diagnosed typhoid fever, arthritis, tuberculosis, malaria, and less frequently some other disease. In typhoid fever the temperature curve is different, there is often delirium, loss of appetite, frequently diarrhoea, and usually no marked perspiration. In undulant fever the mind remains clear in spite of the high temperature, the appetite is usually good, the bowels constipated, the temperature remitting or intermitting, and there is profuse perspiration. In typhoid fever serological tests are positive for the typhoid bacillus; in undulant fever they are positive for the *Brucella melitensis*. Other specific tests quite definitely differentiate them from one another.

In about 50 per cent of the cases of undulant fever there are arthritic symptoms. The joints are swollen, painful, and there may be extensive exudation. Redness over the swollen area is of rare occurrence. Treatment, which often relieves the pain in arthritis, is nearly always without effect in undulant fever. Involvement of the heart and pericardium practically never occurs in the latter disease. The pains in the joints are frequently very similar to those of gonorrheal arthritis. From gonorrheal arthritis it may usually be separated through differential diagnosis. The specific organism has sometimes been isolated in cultures from the exudate aspirated from the joints.

In all except the mild cases, there is a secondary anemia which is nearly always commensurate with the severity and duration of the disease. Nearly all agree that there is usually a leucopenia with lymphocytosis. Many consider profuse perspiration the most characteristic symptom in a typical case. In about 75 per cent of the cases there is nerve involvement, the cranial, facial, and sciatic nerves being most frequently affected. Lumbago is sometimes an annoying manifestation. In the later stages of severe cases, hemorrhage from the nose, stomach and intestines, may occasionally occur. Since respiratory symptoms, though common after the disease has continued for some time, do not occur early, influenza should not offer much difficulty in the differential diagnosis. There are no specific symptoms of diagnostic significance on the part of the digestive system or urinary tract. A coated tongue, fetid breath, a disagreeable taste, and constipation are the usual symptoms. As a rule there is very little disturbance in the secretion of the urine. Sometimes it is scanty and dark colored. Evidence of nephritis is uncommon. In some of the more severe cases there may be a true nephritis. Since the symptoms of the disease are very frequently atypical, chief reliance should be placed on laboratory tests in making the diagnosis.

In many cases the organism has been obtained in cultures from the blood, urine, and milk, and might be isolated through puncture of the spleen were such a measure justifiable. Although the organism is frequently present in the bile, it usually cannot be isolated from the feces. On account of the bactericidal properties of the blood, it is necessary to use a sufficient quantity of bouillon to counteract this effect. Castellani inoculates each of a series of flasks, containing from 50 to 100 cc of bouillon, with one cc of blood. From five to ten flasks should be thus inoculated. Growth of the organism is slow and several days, sometimes six or seven, may elapse before a visible cloudiness is observed. Streak subcultures on plain or glycerine agar should be made at the end of twenty-four hours and if no growth occurs daily cultures should be made until growth is obtained. Before considering the blood negative, subcultures from the bouillon should be made for at least seven consecutive days. Positive cultures are frequently obtained from the blood on the second day after the first appearance of symptoms. If not obtained on the first trial, other cultures should be made later in the disease. Agglutinin absorption and complement fixation tests should be made to determine the race or type of organism causing the infection. Since the *Bacterium tularense* is agglutinated by serum from undulant fever patients in relatively high dilutions, and since the converse is true, agglutinin absorption tests should be made to determine the specific agglutinin. If the organism cannot be isolated from the blood, milk, urine, or other secretions or tissues, agglutinin absorption and complement fixation tests should be made with serum from the patient. In other agglutination tests the dilution should be at least 1 to 50, preferably 1 to 100 or higher.

Since laboratory workers have been accidentally infected in making these tests, the suspensions used in the tests should contain only dead bacteria. Miss Alice Evans was accidentally infected in 1923 and has not yet recovered. Litterer was also infected when the contents of a bottle containing a culture of the organism was splashed in his face. Lake was infected in connection with his work along the Mexican border. Francis of the U. S. Public Health Service, known through his investigations on tularemia, recently contracted undulant fever while conducting investigations in the Hygienic Laboratory and is now confined in the naval hospital in Washington. Several other laboratory workers, at least a score, have also been accidentally infected. Huddelson uses an extremely heavy antigen. The organisms are grown on liver agar and suspended in a 12 per cent solution of sodium chloride to which 0.5 per cent phenol is added. The suspension is boiled for five minutes which increases both its stability and specificity. Numerous other methods have been evolved which are preferred by the individuals employing them. The microscopic and macroscopic methods are both used. Trenti and others have used intradermic tests as diagnostic measures. Trenti uses a filtrate from a 20 days culture of *Brucella melitensis* in broth for making intradermal injections. Patients suffering from the disease respond by giving a positive test which appears in ten hours and continues for forty-eight hours. He injects 0.05 to 0.1 cc. of the filtrate in making the test. A local reaction, redness, edema, pain, and a rise in temperature takes places in those suffering from undulant fever. It is negative in all others according to Trenti. Burnet used the intradermal test on goats with unsatisfactory results. Others report varying results in human tests. It does not seem trustworthy at the present time.

Source of infection and mode of transmission.—The chief source of infection is the milk of infected animals. The cause may be present in the udder or it may gain admission to the milk through contamination by urine or feces. Animals are probably quite frequently infected through the urine, rarely through the feces. Man may occasionally be infected by inhaling the dust from infected stables or yards or he may infect milk or other foods by carrying the germ from these places on his hands or other parts. Infection may occur in both animals and man by contact with infected animals. Farmers, veterinarians, butchers, and others who come in contact with infected animals, their meat or other infected parts, may become infected. There are cases reported in man in which infection followed caring for animals at the time of or following abortion. Infection through coitus is common. In many instances infected bulls have transmitted the disease to herds of normal cows. Infection through coitus may take place in man. Authentic cases of such transmission have not been reported. Animals and man have probably been infected through the inhalation of dust from dried feces and urine. Transmission to man in this way must be rare. Strains of *Brucella abortus* isolated from man are more virulent for cows than are bovine strains. Injections of human strains into cows produce abortion in twenty days; a period of six weeks or more usually elapses after injection with bovine strains before abortion occurs.

Immunity.—It is generally believed that those who have recovered completely from an attack of the disease are protected against a second attack. Relapses and recrudescences following an afebrile period of several months are probably responsible for reports of second attacks. The use of vaccines as a means of prophylaxis has not been carried out extensively enough as yet to furnish a basis for judging their value.

Incubation period.—The period of incubation is usually from ten to fourteen days. In monkeys artificially infected it is fifteen days.

Treatment.—It is the general consensus of opinion that there is no specific method of treatment. Mercurochrome, collargol, acriflavine, and other drugs have been used, apparently advantageously in some cases; in other cases they were administered without beneficial effect. The use of bacterins, sero-bacterins, and undulant fever sera, have not been demonstrated to have much effect. Bacterins, and filtrates from 20 days' bouillon cultures, are sometimes given in protracted cases. The results obtained through this procedure are still *sub judice*.

Prevention.—Prophylaxis is more important than treatment, since the disease might be to a very large extent eliminated by the pasturization of all milk supplies. The elimination of infected animals is also of importance, since human infection is not infrequently acquired from contact with them. Contagious abortion in cows is of additional importance from the economic standpoint. The loss from tuberculosis in cattle alone exceeds the loss from contagious abortion. It has been estimated that the average annual loss from contagious abortion is $100,000,000. At least 10 per cent of all cows are infected. The disease in cows is primarily an infection of the placenta. Approximately 60 per cent of infected cows secrete the organism in their milk. From 30 to 75 per cent of the herds in the United States are infected. In one herd of 150 cows, 82.6 per cent were infected. If raw milk is consumed, it is impossible to avoid the ingestion of the living *Brucella abortus*. When cultures from animals are negative, the presence of the disease may often be detected through agglutinin absorption and complement fixation tests.

MODERN VIEWS OF SYMPATHETIC OPHTHALMIA*

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Sympathetic ophthalmia has always attracted the attention of ophthalmologists to an extent out of all proportion to its frequency, probably not .1% of all eye cases. Bahn saw only two cases of sympathetic ophthalmia out of 25,000 cases. In these few cases, however, one is faced with the prospect of total blindness if treatment is ineffective, so that all the surgeon's resources are demanded whenever such a case is encountered. Since H. Gifford's report of sixteen cases in 1910, twenty-seven cases of undoubted sympathetic ophthalmia have been seen by him or his associates, about half of which have come under my observation. Some of these were seen only in consultation and not followed, and a few were seen some time after the inflammation had subsided, but with sequelae making the diagnosis certain. I will not attempt to review the whole subject nor to make any scientific deductions from these case histories, but will briefly mention some phases in which I have been particularly interested and some points upon which I believe not enough stress is laid in most text-book accounts, emphasizing especially prophylaxis and treatment.

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First, I might refer you to the two most complete recent monographs on the subject which I know, that of Peters in the Graefe-Saemisch Handbuch, 1919, and in English, the article of H. Gifford in the American Encyclopedia of Ophthalmology, 1920.

One of the interesting phases of sympathetic ophthalmia is the still open question of its etiology. On account of the interesting work of Alan Woods, there seems to be a tendency in this country to accept the anaphylactic theory. This is briefly that the original injury to one eye allows absorption of uveal pigment which sensitizes the organism so that further absorption causes a reaction in the second eye which contains such pigment.

This theory offers an attractive explanation of the few cases of so-called spontaneous sympathetic ophthalmia occurring without a penetrating wound, most often in patients with melanosarcoma of the choroid. There are many objections to it, however. It involves a very complicated sequence of events, the most important of which—sensitization to one's own uveal pigment with subsequent reaction in the second eye—has never been demonstrated experimentally. On such a theory, sympathetic ophthalmia would be expected to occur fairly often following any chronic iridocyclitis, whereas it actually occurs almost exclusively following a penetrating wound, the "spontaneous" cases being the greatest rarities. Elschnig's assumption that a condition of lowered resistance is necessary is opposed by the common occurrence of sympathetic ophthalmia in otherwise healthy individuals. Since sensitization is assumed to be complete before the reaction in the second eye occurs, enucleation after this event would theoretically be of no benefit, whereas clinically it has proved of the greatest benefit. The very frequent occurrence of optic neuritis in the second eye, sometimes as practically the only symptom, is hard to explain on Elschnig's theory, as reaction to uveal pigment would not be supposed to affect the nerve that is free of pigment. The histologic picture of sympathetic ophthalmia of the second eye is characterized by infiltration, chiefly of the posterior part of the choroid, while in Woods' experimental animals, this part was free of inflammation. A. Fuchs has examined all the sections of sympathetic ophthalmia in the Vienna collection to determine how far the nerves were involved. Of seventy-one eyes with sections of the nerve, fifty-four showed some signs of inflammation in the nerve or its sheaths. In twenty-four this inflammation was marked, usually affecting the pial sheath and adjacent nerve substance (and consisting chiefly of round-cell infiltration). Fuchs believes that the infiltration reaches the nerve from the choroid around the vessels of the circle of Zinn, that it occurs very commonly in sympathetic ophthalmia and that it would be more often found if the nerves were examined far enough posteriorly.

The toxic theory of sympathetic ophthalmia, that not bacteria but their toxins or the toxins of broken down tissue reach the second eye, seems hardly tenable in view of the frequent persistence of inflammation for long periods after removal of the first eye.

On the whole, most of the facts which we know regarding sympathetic ophthalmia seem most intelligible on the assumption that some living organism is present in both eyes. In cases with a penetrating wound the simplest assumption is that such an organism is introduced into the wound. If the eye is enucleated early enough, no germs reach the other eye and all is well. If it is enucleated before any signs of sympathetic ophthlmia develop in the other eye and, still, the disease develops later, we must assume that the germs have already reached the other eye and require a period of development before producing symptoms, or that they are in the blood stream or in some lymph node, whence they reach the second eye later. The biologic theory proposed by H. Gifford, according to which the germs surviving the struggle for existence in the first eye possess an increased capability of growing in uveal tissue when they reach it by the blood stream, is especially applicable to these cases. If the first eye is enucleated and the inflammation in the second eye subsides, this is only what occurs when we remove any focus of infection, allowing the secondarily infected tissue to take care of what germs have already reached it; while, if it does not subside, it must be assumed that enough have already arrived so that the secondary focus is unable to destroy them. In cases occurring after subconjunctival scleral rupture without a pentrating wound, it is easy to believe that organisms may reach the inside of the eye through the intact conjunctiva, or through a microscopic lesion in it, as occurs in late infections after trephining. For cases with melanosarcoma, the explanation is not so simple on any theory, and the bacterial theory must here stretch a point and assume that the necrotic tissue allows germs from some other focus to invade it, producing a focus from which they may reach the other eye.

If we accept Deutschmann's results, we must believe that cocci, and perhaps several kinds of cocci, are capable of causing sympathetic ophthalmia. The negative results of many more equally good observers, however, indicate that another cause must be present, in probably the majority of cases.

Naturally all the arguments in form of a bacterial cause would apply equally well in favor of an ultra-microscopic organism as the cause of sympathetic ophthalmia. With this in mind, von Szily, in 1924, reported that he was able to reproduce the picture of sympathetic ophthalmia by inoculating rabbits in a pouch behind the ciliary body with the virus of herpes simplex, 10% of inoculated animals showing an iridocyclitis of the second eye with massive mononuclear infiltration of the choroid. Lucic and I confirmed his results and provided additional evidence that the virus traveled via the chiasm and optic nerves to the other eye by obtaining positive inoculations from the second eye and from points along the chiasm and nerves, proving that the virus was present in these regions. We also produced uveitis of both eyes by inoculation directly into the chiasm. All that was proved by these experiments was that such a virus could produce a uveitis of the second eye resembling sympathetic ophthalmia. What is necessary to prove whether or not a filterable virus can produce human sympathetic ophthalmia is the result of inoculations from human cases. Some results, chiefly negative, have been reported by Marchesani, Vollmer, Meesman, and others, which has led Marchesani to discredit the value of von Szily's work. He has recently found *B. subtilis* in the first eye of a case and by repeated inoculations of *B. substilis* produced involvement of the second eye in rabbits. Hence he brings forward a new ramification of the anaphylactic theory, namely that the patient becomes sensitized to some organisms present in the first eye. We have performed inoculations with material from six cases, the results of which are to be published in the Archives of Ophthalmology. Most of them were negative, but with material from one case a severe progressive keratitis was produced, the facts about which are given in that article. I believe it is not necessary to produce sympathetic ophthalmia in such inoculations, as the involvement of the second eye occurs only in 10% of cases with a known living virus, but only to produce a progressive lesion from which ordinary organisms are absent, and from which further inoculations may be made. The difficulties of this are great, as the herpes virus, for example, in inoculable form, disappears rapidly from the original focus within a few days, while enucleation is seldom performed until weeks after the original infection, and it is hard to pick the most recent foci in an enucleated eye for obtaining material. I hope I will be pardoned for having spent so much time on purely theoretical considerations, but I have been much interested in them and believe it is in this direction, through special media or tissue cultures, or by a series of animal passages, such as Rivers and Tillett used in their experiments with the virus of chicken-pox, that we may hope for light on the etiology of sympathetic ophthalmia. With material from a typical case which came in less than two weeks ago, cultures were made in Noguchi medium, and filtrates of this injected into rabbits which are being followed. A complicating factor in this case was the presence of staphylococci in smears and cultures of the first eye which need not lead us to the conclusion that the staphylococcus was the cause of the sympathetic ophthalmia.

To return to the clinical side of the question, I will only mention a few of the early diagnostic signs. It must be remembered that the first sign is usually reduction of vision and that this may occur with very little, and in some cases, absolutely no congestion or pain. Increasing myopia due to ciliary spasms, is occasionally the only symptom, as in a recent case reported by Dr. Swab of Omaha, which I saw with him. This loss of vision is often due to an optic neuritis, so that slight blurriness of the nerve head and enlargement of the blind spot should be looked for.

Many cases have been reported in which optic neuritis was the only symptom noted, and I believe this may occur before any cells can be seen in the anterior chamber with the slit lamp, which Vogt considers the earliest diagnostic sign. He and Butler have reported a number of cases in which this finding was present alone and in which its detection by the slit-lamp led to early enucleation of the other eye with an unquestionable saving of vision. I have seen one case in which a very slight blurriness of the disc was present, with reduction of vision to 20/30, and some cells in the anterior chamber, there being absolutely no congestion or pain. Vision returned rapidly to normal and the neuritis and cellular aqueous cleared up following enucleation of the sympathogenic eye. It is in children, especially, that the symptom of loss of vision is so easily overlooked, and it is probably for this reason that sympathetic ophthalmia in children so often runs a severe and disastrous course. It is here that objective findings with the slit lamp are invaluable. Within the year, I have seen a child of six with an irritable injured eye, showing no congestion of the second eye, but with the whole posterior surface of the cornea fairly plastered with very fine flat deposits so transparent as to be almost invisible by other methods of observation. Since in sympathetic ophthalmia, the all important thing is the earliest possible diagnosis, frequent examinations of the second eye with the slit lamp if possible and at least frequent records of vision and blind spots, should be performed in every case of severe penetrating wound where the retention of the eye is hoped for.

Of the late complications of sympathetic ophthalmia, cataract should be mentioned and will be discussed under treatment. Secondary glaucoma is of fairly frequent occurrence, and since it comes on so gradually that pain may not be complained of, it should be especially watched for. It is due, of course, to adhesion of the iris to the lens, and the first sign of it is shallowness of the anterior chamber and bulging of the iris, going on to typical *iris bombe.*

The chronicity of sympathetic ophthalmia is well known, most cases requiring weeks or months before becoming quiet. The late recurrences coming on long after all signs of active inflammation have subsided, are not so well known, but occur and should be watched for. Finnoff reported such a case at the 1927 Academy meeting and I have watched a case for nine years which has shown four recurrences, the last within a year. Each time, therapeutic measures have apparently entirely relieved the inflammation, and the last recorded vision was 20/20. Another case watched for four years had three slight recurrences, about a year apart, with slight congestion and cells in the aqueous and vitereous, clearing up completely between these, with vision 20/20 when last seen.

The first thing to be considered in the treatment of sympathetic ophthalmia is, of course, its prophylaxis. Prompt enucleation of eyes following severe injuries rendering the prospect for vision hopeless undoubtedly prevents many cases, and would prevent more if we could overcome the almost superstitious faith with which some people cling to a sightless and ugly stump which they are pleased to call an eye. When the injured eye retains vision we are faced with a decision whether or not keeping it involves the danger of sympathetic ophthalmia. Generally the larger the wound, especially if it involves the ciliary body with prolapse of uveal tissue, the greater the danger of sympathetic ophthalmia but one is sometimes surprised at the way in which wounds will heal without complications and with retention of useful vision, and where useful vision is present, it is usually best to make some effort to save the eye. In the case of children, however, or persons living at a distance from competent surveillance, one is undoubtedly inclined to err on the side of safety and remove a number of eyes which might be saved under more favorable circumstances.

Where sympathetic ophthalmia is already present, I believe it is generally recognized that simple enucleation is the safest procedure. Where the operation is done early, however, with no signs of sympathetic ophthalmia present, there can be no doubt that some of its substitutes are to be preferred for their cosmetic result and would be more often employed if there were not some evidence that they involve a slightly greater risk of later sympathetic ophthalmia than simple enucleation. Although sympathetic ophthalmia has occurred in a number of cases after enucleation (80 cases according to Schieck) as well as evisceration, and the statistics reported are insufficient for definite judgment, they do indicate a slightly greater risk following evisceration and evisceration with gold ball implantation, and H. Gifford concludes that where sympathetic ophthalmia is much to be feared, enucleation is probably safer. However, in a fresh injury, before sympathetic inflammation has begun, especially in young persons, I believe the risk is so slight that simple evisderation is justified for the sake of the better stump obtained. Certainly where panophthalmitis has developed, evisceration is the operation of choice, as here the chance of sympathetic ophthalmia is very slight in any case.

When an attempt to keep the eye has been decided upon, I believe the most important measure is the prompt covering of any wound containing prolapsed uveal tissue with a sliding conjunctival flap. A detail which may seem trivial, but which I have seen neglected with disastrous results, is the careful preparation of the flap and placing of sutures ready to tie before excising the prolapse. This excision is often followed by loss of vitreous which is reduced to a minimum if the flap is all ready to close. Another detail which may help to avoid loss of vitreous is the use of Van Lint akinesia as for a cataract operation before any operative procedure is begun. It is more necessary here than in the cataract operation because our patients are more likely to squeeze and we are more apt to meet with vitreous prolapse. Another important prophylactic measure is the use of a foreign protein injection as soon as possible after the time of injury. In dirty wounds, it is good therapy to use for this 1500 units of anti-tetanic serum, although the reaction from this is never as marked as from eight to ten cc of milk given intra-muscularly. After twenty-four hours, time for some reaction to have occurred, the salicylates should be begun where there is any appreciable congestion.

Then begins the period of watchful waiting for signs of infection in the first eye or of sympathetic inflammation in the second. Two laboratory procedures have been proposed which were believed to offer evidence of beginning or threatening sympathetic ophthalmia before it should become clinically evident. The best known of these is the differential blood count, which was reported by Ormond, Price-Jones, Browning and Gradle to show a marked increase in mononuclears, especially large mononuclears, in cases of sympathetic ophthalmia. However, other observers, Hudson, Zentmayer and Collins have seen cases in which it was absent, while still others, including myself, have found a mononucleosis in sympathetic ophthalmia but also in other chronic cases of uveitis and other conditions. A mononucleosis may occur in normal health, as I once observed in myself, so that its value as a basis of decision for or against enucleation must be considered doubtful.

The other procedure is the use of skin tests and complement fixation reactions with uveal pigment as proposed by Alan Woods. He found that cases of penetrating wound which recovered favorably showed positive complement fixation with negative skin test, while those which developed sympathetic ophthalmia or failed to heal promptly showed negative complement fixation and positive skin tests. He considered these patients to be sensitized to uveal pigment without having become immune to it.

In a recent report of 100 examinations, Fodor obtained conflicting results and concluded that it is unsafe to base any decision as to enucleation on the skin tests. We have made tests on two cases of sympathetic ophthalmia, and two of favorably reacting penetrating wounds, without obtaining any positive skin tests.

Thus we must rely principally upon clinical observation, aided where possible by the slit lamp, and upon the slightest definite evidence of inflammation in the second eye, must be prepared to combat it with every means in our power. There can be no hesitation in removing the sympathogenic eye if it is blind or nearly so, while if it still has useful vision, especially if the condition of the second eye is already almost as bad as that of the first eye, an effort may be made to save the first eye, as cases have been reported in which it became the only useful one. In one of our cases, the injured eye was much quieter than the second, when the case was first seen. It was retained, and under active treatment vision of 20/30 in both eyes was obtained. In another, practically normal vision was obtained in both eyes after a very stormy course in the second eye. The all important thing is to act promptly when enucleation is decided upon, as the delay of a day or two may mean a great difference in the outcome.

The use of large doses of sodium salicylate has become almost a standard method of treatment, since H. Gifford published his results with it in 1899, and his dose of one grain per day for every pound of body weight of the patient has been accepted by many. It should be remembered, however, that much larger doses are tolerated by the average patient, so that where this dosage is not producing results, it should be increased to 200 or 250 grains a day for an adult. Where the stomach rebels, it may be given in 60 grain doses by enema, and a combination of medication by mouth and by rectum is often useful. Moderate deafness and tinnitus must not be considered contraindications to treatment, but where delirium or vomiting occurs and enemata are not retained, cincophen or atophan and neocincophen or tolysin, may be given in the same dosage. The tinnitus and mental symptoms from both of these drugs are much less often seen, and the gastric irritation while sometimes marked with cincophen, is usually entirely absent with neo-cinophen. (This can only be obtained in some places, I believe, under the trade name of tolysin). The effect of these drugs is in most cases almost as good as that of the salicylates, and I have seen cases which seemed to respond even better, although in others the opposite may be the case. Strontium salicylate is preferred by some to sodium salicylate as causing less gastric irritation, but I have had no experience with it. Many authors have recently advised giving sodium salicylate by vein and when a case is first seen, a little time may be saved by this method. Sodium salicylate is absorbed very rapidly, however, from the stomach, since I could demonstrate it in the aqueous of rabbits 30 minutes after a dose was given by stomach-tube, so there would seem to be no reason for giving it by vein after this first dose, except, as I have used it, when enough cannot be retained by mouth. The oral method will have to be depended upon, in any case, since it is impractical to give a sufficient amount by vein, not over twenty to thirty grains at a time. It is especially important not to stop the salicylates as soon as the eye becomes quiet but to taper off gradually and continue some salicylates or their substitutes, sixty to ninety grains a day, for weeks or months longer. These amounts can be borne by nearly all patients without any ill effects except the discomfort of taking them.

Foreign protein therapy has been used in various forms, and especial enthusiasm has been shown recently for injections of auto-serum by Vila Coro and of anti-diphtheritic serum by Verhoeff who used very large doses. I have never been persuaded that auto-serum acts in any other way than as a protein injection and hence have preferred milk or typhoid vaccines. With the latter one can be more certain of the reaction desired, as Allen has shown, and I have seen good results from its use. The salicylates should be stopped for twenty-four hours after a foreign protein injection, to allow a proper reaction, and where the salicylates are having the proper effect, I hesitate to use the foreign protein for this reason.

What part focal infections can play in sympathetic ophthalmia is hard to understand, unless germs or toxins from such a focus can accumulate in the diseased organ and complicate the disease already present. A number of cases have been reported, however, among them that of Key, and E. V. L. Brown, in which removal of such foci was of great benefit, and we have made it a practice to look for them, and remove them when found in a case not responding to treatment. While I have not seen any such definite instances of improvement as those of Key and others, in the recurrent case mentioned above the removal of tonsils at one time and teeth at another seemed to cut short two of his attacks .

Salvarsan has been much used, especially by the French, but I have had no experience with it, although H. Gifford was one of the first to try an arsenical, atoxyl, in this disease and believed it was of value. We do use mercury inunctions in most cases, however, in addition to the salicylates.

In treating the complications of sympathetic ophthalmia, such as glaucoma and cataract, one is faced with the well known tendency of eyes with sympathetic ophthalmia to respond to any operative interference by increased inflammation which may cause the destruction of the eye. An iridectomy for glaucoma under these circumstances is apt to result disastrously and I believe the mildest form of interference when the iris is bulging is a small peripheral iridotomy performed, as H. Gifford has described, by cutting through the iris root with a thin Graefe-knife or Knapp needle, bringing the knife out through the sclera under the conjunctiva. In several cases we were able to keep the tension down by Gynergen or ergotamine given subcutaneously until the inflammation was under control. In these cases we must do something when the tension remains high, but in the case of cataract, one can and should wait until the eye has been quiet for at least a year before attempting any operation. Even then, one should be especially certain that no foci of infection are present and should have the patient well salicylized before operating.

The results in the twenty-seven cases as shown from our records, all of which received large doses of salicylate or cincophen, a large number foreign protein injections, while a small number also had foci of infection removed, were as follows: Eight had vision of 20/20, eight of 20/30, two of 20/50, while three had only ability to count fingers and six only perception of hand movements to zero in the remaining eye. Two cases had practically normal vision in both eyes. In other words, 66⅔% had good vision while 33⅓% were nearly blind. A number of these cases were not seen until after their course had been run, while a few were still under treatment when last seen.

If any conclusion were to be drawn from the observation of these cases, it would be that when seen early and treated vigorously from the start, sympathetic ophthalmia does not present such a gloomy prognosis as was once thought. In fact, by far the greater number of cases respond to the forms of treatment outlined above. The most formidable complication which can occur is, I believe, secondary glaucoma, since here, to save the eye from one form of blindness, we must risk ruining it by another. There is no disease which will better reward careful observation and courageous persistent treatment than sympathetic ophthalmia.

Doctor: "So your folks are moving West. Going to settle out there?"

Patient's Boy: "Why—er—no. Guess we'll have things charged same as here."

THE RELATION OF FOOD TO TEETH IN CHILDREN*

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It seems to me whenever I write a paper, I get more out of it than any one else. I can cheerfully recommend to you to do likewise. I have received more good from this paper than I expected. I was first reminded of the relation of food to teeth in children by Dr. Neff of Kansas City. I thought we did not pay enough attention to the subject. I must confess I have learned something. I think I profit more than the people to whom I talk. I believe most papers are practically a rehash, or possibly we put the thought in a little different light than some one else.

In a general way it seems that the public has been sufficiently educated by dentists and physicians to enable them to grasp the value of the necessity of the daily use of the tooth brush and that tooth and mouth cleanliness is an essential part of good health.

On the contrary, however, there is an apparent indifference or diffidence on the part of the average physician to intelligently advise his clientele on the kind of food which will produce good healthy teeth and what other factors are necessary in order to obtain good teeth. Comparatively the subject is a rather recent one. Within the past ten years, however, the literature has been quite abundant. The problem is not one for the physician alone, but rather one of cooperation between dentist and physician. Do the physicians generally fully realize their responsibility? Physicians usually see the children before the dentist and should be the person to give advice regarding diet and other measures necessary for the proper production of good teeth.

From the physician's standpoint what constitutes good teeth? The jaws should be well formed and not overlap. The teeth should be firmly embedded, the gums not receding. The teeth should be hard, regularly spaced, and show no decay, black spots, notches, cupping, or evidences of being worn off in places. May Mellanby has shown that tooth decay is the rule and not the exception. She examined 1036 teeth and found 86 percent defective, either slight or severe, and only 24 percent normal. A normal tooth composed as it is of dentine, cement, and enamel, possesses within itself adequate resistance against tooth decay.

If children are properly fed, so that sufficient calcium is deposited in the teeth, thus giving proper, smooth surfaced teeth, in well developed and formed jaws, theoretically there should be no necessity to clean the teeth. In brushing there is always the possibility of destroying the normal association between the soft gums and the hard enamel of the teeth. Calcification of the first set of teeth is said to begin between the fourth and fifth month of pregnancy. However, the greater portion of the mineral matter necessary for the proper functioning of the baby is furnished by the mother in the later months of pregnancy. There can be no question that the diet of the pregnant mother, her manner of living, the amount of sunlight to which her body is exposed, and the amount of exercise she takes, all have a definite bearing on the kind of teeth her offspring will have. The old saying, "for every child a tooth," is to some extent true. The mother tends to sacrifice her own needs to those of her child. However, the pre-natal influence for bad teeth is not so great as during the nursing period when the mother tends to exhaust her stores.

Probably the most opportune time for the development of poor teeth occurs at the weaning time. During the nursing period usually there has been stored in the body an insufficient amount of vitamin D. Certain other factors which have only an indirect relation to proper food have a bearing on good tooth formation. I refer (1) To the maintenance of a proper acid base equilibrium in the body. (2) The influence of certain infectious diseases, such as scarlet fever, diphtheria, typhoid fever, and any prolonged infectious process. (3) Various disturbances arising from certain endocrine disfunctions. Most of us do not wholly grasp the peculiar chemical changes which take place in the body as a result of maintaining a proper acid base equilibrium. However, there can be no question that the maintenance of this equilibrium is necessary for proper food metabolism as well as sound tooth structure.

Mentally defective children nearly always have bad teeth. The relationship of the para-thyroid hormone to the calcium metabolism is well known. Certain of the other endocrine glands also have an influence on the calcium and phosphorous metabolism. A disturbance of endocrine function may account in some measure for the incidence of poor teeth structure in mental defectives. Diseased teeth also appear to result from eating foods which require very little, if any chewing. Under normal conditions the saliva in the mouth in some degree prevents tooth decay. If certain pathologic processes are present the saliva fails to perform this function.

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*Read before annual meeting Nebraska State Medical Association, Omaha, May 15, 1929.

For several years experiments have been under way to find the proper foods which form good teeth. These experiments were begun on rats guinea pigs, and dogs, and finally after certain facts became evident the knowledge thus obtained was used on the human.

What factors are necessary for proper tooth calcification and sound tooth structure? (1) A vitamin—the anti-rachitic vitamin D. (2) Calcium and phosphorous. (3) Foods exposed to the sunlight or mercury quartz light. (4) Exposure of the body to sunlight or quartz light.

Vitamin D until recently has been known as Vitamin A. It is now known that vitamin A differs in some respects from vitamin D. Vitamin A is the growth producing vitamin, probably also it is anti-infective. It is known that when animals are fed on a deficient amount of this vitamin they are more prone to develop carious teeth, and often pyogenic or other infective processes. Vitamin A thus plays an important part in the child's growth and has some part in tooth formation. Vitamin D is the most vital essential for the promotion of proper tooth formation. This vitamin is found in fats, such as cod liver oil, most fish oils, whole milk, egg yolk, suet and butter.

Calcium and phosphorous are necessary if good tooth structure is to be produced. Calcium can almost entirely be eliminated by giving a diet containing bread, jam, fruit, rice, oatmeal, meat and fat. While calcium and phosphorus are quite necessary, their role is not so essential as vitamin D. It has been found that no matter how high the calcium and phosphorus intake may be unless there be a sufficient vitamin D in the diet, defective calcification will result. Certain foods have a specific action against vitamin D and good teeth. It would seem that the foods in this group are endeavoring to offset the good effect of vitamin D. They attempt to destroy the natural proper calcification of teeth.

Cereals and cereal products in a general way have a specific anti-calcifying effect. Apparently the chief offender is oatmeal. Others are maize, barley, rye, rice, white flour. If these foods are fed in any considerable amount, poor teeth will result. The effect of this diet, however, is overcome by feeding calcifying food in sufficient amount.

According to the Mellanbys, who have done most of the experimental work, it remains to be proven that sweets are directly responsible for carious teeth. Their experiments have proven, however ,that with a deficient vitamin D in a given diet, the more sweets eaten the greater probability to carious teeth. From a practical standpoint, what food are best in order that good teeth can be produced? These are eggs, milk, butter, meat, and the green vegetables. The value of cod liver oil in promoting proper calcification is, of course, well known.

COMMENT

(1). Preventive medicine and preventive dentistry are not easily separated one from the other. Intelligent cooperation between physician and dentist is quite essential if proper results are to be obtained. (2). Physicians generally have given insufficient attention to the problems of diet for the prevention of improper tooth structure. (3). While prenatal influence performs a part in good tooth structure its portion is not as important as one would naturally expect. (4). Weaning time is an especially hazardous time for babies. It is necessary at this time to realize the importance of a mixed diet containing foods rich in vitamin D and the necessary amount of calcium and phosphorous. (5). The key to the situation finally narrows itself down to the man who sees children from infancy upward and who is able to diagnose rickets early, before marked bony changes have occurred. He must be able to prescribe a proper diet and regime for the prevention of rickets and thus insure normal jaw structure and tooth formation.

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These tables represent a series of experiments undertaken by Drs. Mellanby, Pattison & Proud, endeavoring to show the effect of a proper diet (A) on the teeth. Diets B and C are both deficient diets.

TABLE I—Daily Diet

Diet	A	B	C Hospital Diet
Milk	1½ to 2 pts.	½ to ¾ pt.	1½ pts.
Bread	½ to 2 ozs.	5 ozs.	Ad lib.
Fat	1 oz. (butter)	1 oz.	1 oz.
Sugar (including cooking)	1½ ozs.	3 ozs.	1½ ozs. and jam, etc.
Oatmeal, groats or gruel	—	2 to 4 ozs.	Occasionally
Rice, Tapioca, etc.	½ oz.	½ oz.	½ oz.
Meat (cooked)	1½ oz.	1½ oz.	2½ ozs.
Potatoes	2 ozs.	4 ozs.	4 ozs.
Other Vegetables	2 ozs.	½ oz.	½ oz.
Cocoa	Made with milk	Made with water	Made with milk
Egg	1	Very little	Sometimes
Fruit, etc.	¼ orange or ½ tomato	As in Diet A	As in Diet A
Cod-liver Oil	3 to 6 dr.	—	2 to 3 drs.

—Courtesy of Mellanby, Pattison & Proud, British Medical Journal.

TABLE IIa

Summary of Investigation and Results

	A	B	C
Number of patients in each group..	9	10	13
Average time between admission and first inspection (months)........	7.5	8.5	8.5
Average age at which diet started (years)	7.5	7.5	7.08
Average period covered by the investigation (months)	7.5	7.5	8.0
Average number of erupted teeth per child at first inspection..........	18.75	19.25	21.0
Average number of carious teeth per child at first inspection..........	6.5	6.125	7.0

—Courtesy of Mellanby, Pattison & Proud, British Medical Journal.

TABLE IIb

Summary of Investigation and Results

EXTENSION OF CARIES	A	B	C
Average number of erupted teeth per child at last inspection............	17.75	18.0	20.5
Actual number of new teeth becoming carious between inspections	6.0	28.0	20.0
Average number of new teeth per child becoming carious....................	0.65	2.8	1.54
Number of teeth already carious in which caries increased....................	7.0	23.0	18.0
Average number of teeth per child in which caries increased................	0.75	2.3	1.4
Total number of teeth showing new or increased caries	13.0	51.0	38.0
Average number of teeth per child with new or increased caries........	1.4	5.1	2.9
Total number of carious teeth in which hardening has occurred......	14.0	7.0	13.0
Softening has occurred in..................	0	4.0	1.0

—Courtesy of Mellanby, Pattison & Proud, British Medical Journal.

TABLE III

Average number of teeth per child showing a spread of caries previously present and new caries areas, together, with the main differences in the three diets.

DIET	MAIN DIFFERENCE IN DIET	Average No. of Teeth Per Child in Which Caries Has Spread
A	Abundant calcifying vitamin and calcium: small amount of carbohydrate, not including oatmeal..................................	1.4
B	Less calcifying vitamin and calcium: much carbohydrates, including oatmeal	5.1
C	Intermediate amount of vitamin A, calcium, and carbohydrates: some oatmeal	2.9

—Courtesy of Mellanby, Pattison & Proud, British Medical Journal.

DISCUSSION

E. V. WIEDMAN, M. D., (Lincoln): In order to evaluate properly the importance of this paper, one must turn the pages of history and see how dependent civilization is on its food supply—how the progress and success of any nation depends upon its own food supply. We can turn back to the World War and see whether the nation's health has not been dependent on this vast subject. A nation depends on its children, and the health of its children depends on its food and the prevention of disease.

I do not know that I can add anything to what Dr. Clarke has given you, but it seems to me this problem summarizes into two factors: first, the importance of prenatal care. This is a very important field and possibly is underestimated. A mother going through pregnancy demands a certain calcium content of the food. I wonder how many obstetricians take the content of the saliva? We have another important factor, which is the disturbance of the endocrine system. Living in a fast age, we have an unbalance. There has been a lot of literature published and a lot of work is being done on this subject.

Some of our co-workers at Iowa City have found disease plays an important part in the calcification in the teeth. They find you can arrest dental caries by placing children on proper diets. This is an important point.

When you turn the pages of history, you will find we have had dental caries from the age of the Egyptians down to the present day. We need more research work in this. Oftentimes we have a case of dental caries following long continued fevers. Whether we accept the theory of Miller that a diet high in carbohydrates produces an acidity which causes a dissolution of our inorganic cells and a secondary invading organism which causes dental caries, or whether we accept the work of Bruening, there is some argument. It is up to the dental colleges and medical men to do some experimental work which has been left mostly to the dental profession. We can not disregard Bruening's work of the bacillus producing acidity as being the primary cause of dental caries. His work has been corroborated to an extent. Here are contending theories, but both agree there is decalcification.

What is a perfect tooth? We have all degrees from severe dental caries to perfect calcification. We should be able to establish an immunity and prevent dental caries.

I appreciate the courtesy extended to be able to discuss this paper. I enjoyed Dr. Clarke's paper very much.

H. B. HAMILTON, M. D., (Omaha): Dr. Clarke has, in a brief way, given us some of the salient points of the problem. I should like to reiterate the importance of variety in diet. I am not so sure it is the giving of carbohydrates that causes damage as much as the fact when they take those, they fail to take other things more important from that standpoint.

Dr. Neff said teeth were demineralized in the presence of fever, and also by the giving of alkalies. We have infection and the overcoming of alkalies to be considered. Variety may be given much earlier than we realize. The prematures are prone to develop caries of the teeth. I think it can be diminished, along with other malnutrition conditions, by the early giving of variety of foods.

It is easy to use a vegetable water. Use a lot of vegetables and strain the vegetable water off to dilute the milk. In the first two weeks, we can start egg yolk which biologically ought to be a good thing, and clinically and experimentally has been proven to be. Gradually increase the amount, and in a short time the baby may be getting an entire egg yolk daily. We can increase the variety to a great extent.

I remember two of the most pronounced cases of faulty dentition I have seen have been in breast-fed infants. In one case the mother—a poor colored woman—was limiting her diet to cereals. This diet must extend back to the prenatal period, and to the nursing period for the breast-fed baby. We can give egg yolk and vegetables and fruit juices.

Dentists are recognizing the lack of proper nutrition in children and suggesting diet, with which idea I am not in accord, because I think they are looking at it from one standpoint, and the child must be observed from all nutritional factors. I think it is up to the doctor rather than the dentist to suggest diets.

VICTORE LEVINE, M. D., (Omaha): This is an interesting subject to me. To the physician, bad teeth mean more than bad teeth. It is a sign of malnutrition and far more important than weight, because weight does not always indicate the presence of a condition of malnutrition. We can tell more by looking into the oral cavity as to the condition of nutrition of the child.

I am interested in the way Dr. Clarke presented the paper. I believe he has covered the salient points very well. I wish to point out several things with reference to what he has touched on. One is we must consider the variety very much, especially in this part of the country. Congenital goiter, congenital hyperthyroidism, and cretinism simulate, in a clinical way, rickets. We have in those conditions delayed closing of the fontanelle, delayed dentition, and all kinds of bone deformities. Small amounts of iodine will help in rickets by increasing the calcium content of the blood. Congenital goiter and cretinism can usually be prevented. Disease of the thyroid is a class of disease easy to prevent by giving the mother during the period of pregnancy twenty milligrams of iodine twice a week. All the disturbances due to lack of iodine can be entirely eliminated.

Another important point I wish to make is that in laying down our bone and teeth we must have three factors: Calcium and phosphorus—the bricks—and also the bricklayers—namely, sunlight, or vitamin D. I find physicians prescribing calcium and iodine before a tonsillectomy in hopes it will increase the calcium content of the blood and save the patient from excessive hemorrhage. As a matter of fact, that calcium goes in and out and never does it have a chance to be absorbed. Calcium alone is merely the brick, and not the bricklayer. If calcium is to be given, it must be with a large quantity of foods containing vitamin D or a large quantity of exposure to sunlight, or ultraviolet, or a vast amount of acid in the stomach.

Sunlight increases gastric acid. That means it increases the intestinal acidity. When you have an acid intestine, calcium salts can remain soluble and pass out of the intestines into the food. When your calcium meets an alkali medium, as it does, then the calcium precipitates and does not have a chance to get through. Take a baby during infancy living on milk, which is extremely rich in calcium and phosphorus, and yet it may develop rickets. There you have calcium, and yet you have no sunlight, and you may be short in vitamin D.

I want to praise oatmeal rather than to cause it to fall out of the market. The previous speaker has said it is not what we take that causes disease, but what we fail to take. When we have a large amount of oatmeal, there is no opportunity for other foods, and therefore a danger of having foods not properly balanced in calcium and phosphorus vitamins.

DR. CLARKE, (closing): I am very grateful to the men who have discussed this paper. I think they have covered the subject accurately and well. Of course a paper of this kind must be a summary, and one can not go into too much detail.

I think the importance of variety in diet can hardly be overestimated. We are gradually coming to that. The doctor should be the one to outline these diets. We must get in the habit of taking the time as the people come into the office and outlining the proper diet. Do not let the old woman next door do it.

I think Dr. Levine's point about the potential thyroid cases was well taken. I believe it is important to recognize them. You do not see them every day, but perhaps once a month. They are fairly easily recognized—youngsters with thick lips and skin, and sometimes with bulging of the eye. The giving of thyroid and iodine oftentimes prevents the development of a possible thyroid enlargement.

Another point is the milk. Do not give a quart a day. One to one and a half pints is enough in twenty-four hours.

The comment on oatmeal I think is correct. While oatmeal has its faults, it also has its virtues. We must not entirely eliminate it. We should recognize these youngsters should not be put on cereals as early as we have been doing. So many of our people are giving cereals first. We must think of something else rather than oatmeal and cereals in general.

The final point is that we doctors must recognize rickets early before the bony changes have taken place—before marked skull formation. We must recognize rickets by its clinical symptoms and treat it. In that way will we prevent improper tooth formation.

HYPOTHYROIDISM IN CHILDREN*

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This communication deals with a perusal of the literature and the demonstration of three cases, with the aim of stimulating an interest in a group of cases that are often neglected in general practice; namely, thyroid deficiency in children. We have purposely omitted those cases of disturbed thyroid function associated with adolescent and colloid goiter. We know that these cases of hypothyroidism must be recognized early and treatment instituted accordingly, if much improvement is to be hoped for.

For purposes of clarity, we propose to define certain terms to which references are made later in this paper. Hypofunction of thyroid, as used by Rowe and Lawrence, is applied to that condition in which all of the clinical and laboratory findings indicate a lowered functional level, the extreme picture of which is produced by complete ablation of the gland; in other words, a state of demonstrable absence or lack of the internal secretory activity.

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*Read before the Lancaster County Medical Society, February 5, 1929.

Dysfunctional states are those in which evidence of hyper- and hypothyroidism are simultaneously observed. The degrees of hypofunction could be well designated by the terms mild, moderate, and severe. All types of hypothyroidism from the mildest to the severe merge into each other so that such a designation as cretinism does not make a good universal application. It seems better to use cretinism to designate the classic clinical syndrome of a severe type of hypothyroidism whether it be endemic or sporadic. Infantile myxedema, athyreosis, and hypothyrosis will not be used. Their usage is discouraged by many authors.

The anatomy and the physiology of the thyroid gland is too well known to be considered at much length, but a few salient points we believe should be reviewed in order that we may more clearly enter into a discussion of the etiology. It has long been known that the weight of the thyroid gland varies according to the geographic location of the individual. Many authors have attempted to establish an average body weight-gland ratio. The figures given and used by many authors are the ratio of 1-400 to 245 in the new born; 1-700 to 1000 in the older child; and 1-2000 to 2500 in the adult. Kendall in 1914 showed that the thyroid gland produced from iodine a substance which had certain actions, tentatively named alpha-iodine in order to differentiate it from the other iodine compounds occurring in the gland, which were called beta. This substance is now generally called thyroxin. The theory of the physiological action of the thyroxin is that of a catalyst which bears an active relation to the production of energy within the tissues. The substance appears to function within the tissue and there seems to be an equilibrium between the amount in the tissue and the amount in the blood stream and the amount at its source of supply, the thyroid gland. As a catalyst it merely increases the rate at which these fundamental reactions are carried out. This increase in metabolism results in metamorphosis. Gudernatsch, Swingle, and others have shown that when tadpoles are fed thyroid substance there is a rapid metamorphosis into frogs, without any associated increase in the size of the animal; and contrary to this, thyroidectomized tadpoles continue to grow and become large tadpoles but metamorphosis into frogs does not take place.

It is generally recognized that there is a definite interrelationship of the various members of the endocrine system. A deficiency of thyroid secretion probably interferes with the proper function of the other members of the endocrine system. Biedl states that the thyroid plays the greatest role of all the internal glands. Herrmann is of the opinion that in sporadic cretinism the absence of thyroid secretion probably interferes with the growth stimulating function of the pituitary and when thyroid extract is given this function is resumed.

Heredity plays an important part in the disturbances of the thyroid gland. Many authors have cited instances where several members of one family are affected. The disturbance may be of a different character in each individual, or this inherent tendency may manifest itself in disturbances of other members of the endocrine chain. Herrmann advances the theory that there are individual differences in the functional efficiencies of the thyroid gland. Further, this so-called inefficiency may not be evident until an extra demand is made upon it by infection, toxemia, or psychic trauma.

It is believed that in regions of endemic goiter a lack of iodine in the mother's organism may cause a failure of thyroid development during fetal life or shortly after birth. McGarrison makes a claim that one out of every twenty goitrous mothers give birth to mentally defective or imbecile children, and that the goitrous girls of today are the goitrous mothers of tomorrow.

The diagnosis of hypothyroidism in children is largely a clinical deduction. Because of the fact that treatment must be started early if much improvement is to be expected, early diagnosis is emphasized. The average parent does not expect much of a baby a few months old, and if he appears to be very quiet or is slow at noticing his surroundings it is thought that he is a good baby and that he is just too young to be making a great deal of progress. As a rule the patients are not brought to the medical advisor until they are six to eighteen months old. Many of the milder types are not suspected until they enter school, where the instructor is quicker to pick up a mental aberration. The parents grow to accept a degree of backwardness in their own children and start early to make excuses for them.

The manifestations of thyroid hypofunction may be grouped under two headings: (1) physical defects; (2) mental defects. Lewellyn Barker points out the triad of hypothyrodism as follows: Stunted growth, mental dullness, and constipation. The physical defects, although as serious as they are, cannot be compared to the seriousness of mental deficiency. Engelbach maintains that 70 percent of the children having anomalous development during the first year of life as presented by the following clinical signs, are cases of hypothyroidism: (1) Weight of more than eight pounds at birth; (2) eruption of the first tooth later than the seventh month; (3) walking later than one year; (4) the use of dissyllables and short sentences later than one year. Other signs of a disturbed secretion are late closure of the anterior fontanel, subnormal temperature, coldness of the extremeties, dryness of the skin, coarseness and dryness of the hair, goose flesh skin, late separation of the cord, umbilical hernia, distended abdomen, thick tongue, gaping mouth, and certain types of eczema. In the true cretin the fat distribution is quite general, with some characteristic areas noted as the dorsum of the wrist, the supraclavicular region and the dorsum of the arch of the foot. Inability to talk is generally accepted as a symptom of marked importance in the consideration of the hypothyroid. The utterance of uncouth, meaningless sounds, such as shrill cries and drolling of senseless murmurs often of a guttural quality, during the first year of life are frequently signs of mental disorder and should be closely investigated.

From a practical standpoint the basal metabolism cannot be applied in the diagnosis of thyroid deficiences in children. There are many difficulties encountered in obtaining the rate of metabolism in children. The chief of these are, briefly, the inability of the patient to satisfactorily cooperate in the methods of indirect calorimetry; and secondly, there is no generally accepted standard of normal in children. The average reduction in metabolic rate in cretins is 20 to 30 per cent. The glucose tolerance test is mentioned only to be dismissed, as not being of much practical value in arriving at a diagnosis.

The study of the osseous system by the roentgen ray has come to be recognized as a valuable aid in the diagnosis of hypothyroidism. Engelbach states that it perhaps is of more value than the basal metabolism, blood chemistry, and other so-called specific and laboratory determinations. In a long review of the osseous development in endocrine disorders, Engelbach and others give a comparative table of various investigators on the appearance of ossification centers as well as a large series of their own study, to determine the normal, and a large group of endocrine disturbances; namely, thyroid and pituitary hypofunction, in which a constant late appearance of these centers are established as a criterion in the diagnosis of hypothyroidism. Other conditions which impede mental activity in infants do not influence the osseous nuclear development.

A satisfactory response to the administration of thyroid substance is interpreted by many authors as a confirmation of the diagnosis.

TREATMENT

There is a great deal of evidence that careful study of the metabolic rate in the gravid women offers some hope of lowering the incidence of hypothyroid children. It is known that a certain percent of gravid women have an increased basal metabolic rate, varying from plus 15 to plus 25 per cent after the third month of gestation, and this increase is construed as a normal response of the thyroid in pregnancy. Engelbach strongly maintains that the clinical examination of the expectant mother should include a study of her basal metabolism; and if a thyroid hypofunction is determined, gland therapy should be instituted. He further believes that if roentgenograms were made of all infants who are overweight at birth or who show mal-development during the first year, many of the cretins and the less pronounced thyroid deficiencies could be diagnosed and the effects of early treatment be derived accordingly.

Since we do not live in an endemic goiter area, our problem of preventing endemic cretinism is not great. However, it has been positively shown that the proper exhibition of iodine in goitrous districts has lowered the incidence of severe endemic hypothyroidism.

The curative treatment, if that term may be used, rests in the administration of the active principle of the thyroid gland. Milder forms of hypothyroidism if recognized early can be greatly benefited and in most instances restored to normal. The mental aberration does not respond to treatment as well as does the physical deficiency. In general the prognosis depends upon the age at which treatment is begun and also upon the duration and regularity of that treatment.

Thyroid gland substance in tablet form, standardized as to its iodine content (.2 per cent in thyroid combination), is the most valuable remedy. In the small child we believe it is better to start with about ¼ gr. twice a day and gradually increase until a physiological response is noted. The effect of thyroid medication is evident in three to five days. The amount that is required in the individual case is quite variable.

However, there is no physiological basis for a dose of standard dried gland greater than six grains per day. Thyroxin has no advantage over the dried substance. The signs that are of greatest importance in determining the dose are the general activity of the patient, the temperature, the body weight, and the bowel movements. Over dosage may be followed shortly by perspiration, marked irritability, and bed wetting.

Marine advocates the administration of iodine as a part of the routine treatment of poor thyroid function whether it be goitrous or nongoitrous.

It has been our plan to use an iodized cod liver oil to supply the necessary iodine. However, the improvement with iodine necessarily varies with the amount of thyroid gland present and its ability to produce thyroxin.

CASE REPORTS

Beverly S. Family history: Father living and apparently well. Mother living and quite well. Both parents are of medium build and fairly stout, the mother weighing about 150 pounds, the father about 165. One brother living and well, birth weight 6½, tends to be of slender type. Two sisters living and well; one sister weighed 7½ at birth, the other 8½ at birth; both are considerably overweight, very quiet, and get along fairly well in school. The mother has had no miscarriages.

This baby was born April 12, 1928, at full term, after an uneventful labor. Birth weight was 8½. There were no deformities and the baby appeared to be normal in every respect. The cord came off on the 11th day. There was a slight exudate four to five days after the cord was off. After healing, some bulging of the umbilicus was noted. However, after four weeks of reduction by strapping, it was less marked.

The baby has been breast fed and after the first month complimental feeding was added. After the fourth month the babe was put on a lactic acid milk mixture, due to the fact that a very small amount was obtained from the breast. Almost throughout, a low fat, low carbohydrate mixture has been used, but in spite of the minimum caloric requirement the baby has gained very rapidly and has always been overweight. The general appearance has always been good. The skin was of fair turgor, the muscles rather flabby.

At five months she weighed 17 pounds and 1½ ounces. At nine months she weighs 23 pounds and 10½ ounces and is 28 inches tall, being about five pounds overweight. There are no teeth present. The baby was not able to sit alone until she was about eight months old. The anterior fontanelle measures about 1½ inches in its widest diameter. There is no special distribution of subcutaneous fat. There is no fullness of the wrists, no beading of the ribs or flaring of the costal margins. A study of the osseous centers shows the carpals, the knee and the ankle to be normal for a child between the ages of six months and one year.

In view of the chronological history of this child to date we have felt that a diagnosis of hypothyroidism was justified. We feel that this is the type of case that should command close observation and should be treated early with the hope of developing a properly functioning gland.

Doris H. Female. Age 2½ years.

Family history: Father aged forty-seven, living and well, of medium build and of average intelligence. Mother thirty-eight, living and well, of medium build, and of average intelligence. There are three brothers living and well, all older, all seem to be quite well and are doing the school work expected of children of their respective ages.

The child was first brought to us when seven months old for the complaint of cyanosis. She was a full term baby, spontaneous delivery. Birth weight was not definitely known, but thought to be about eight pounds. She was breast fed every two to three hours; however, was a poor nurser. At about ten days the baby had a very marked blue spell which lasted for about two hours. She became cold and lifeless. Since that time she had had several spells but of lesser severity, and at that time when she cried her face would become dusky.

Resume of examination: The baby appears passive and shows no interest in its surroundings. The face is broad, nose is rather wide and flat. The tongue seems to be thick and protrudes between the lips. The skin feels thick, the subcutaneous fat feels boggy. The hands and feet are blue and cold. The lips and face are also moderately dusky. The neck is short, rather thick, and the presence of a thyroid is indefinite. The abdomen is moderately protruberant but there is no umbilical hernia. The hands and feet are large, the fingers and toes being quite short and thick. Examination of the systems was generally negative except a congenital heart difficulty which we interpreted as being a pulmonary stenosis. The blood Wassermann of the mother was negative.

A diagnosis of cretinism was made and thyroid gland, grs. ¼ night and morning, was given with general feeding directions.

At eighteen months the babe looked markedly improved, showed a greater alertness, and tried to say a few monosyllabic words. The tongue was less thick; the mouth still gaped; the skin was softer but the subcutaneous tissues felt doughy. She weighed 19 pounds and 6 ounces and measured 27 inches. Two lower incisors were present. At this time she was getting 2 grains of thyroid substance daily.

At two and one-half years the baby is able to feed herself, can walk with the aid of chairs, and says "daddy", "baby", "chicky", etc. She is more alert and seems to notice her surroundings more intelligently. She makes her wants known. She weighs 27 pounds and 4 ounces and her height is 28½ inches. Her hair is still rather fine and thin, face broad, and mouth gaping. Her tongue is much thinner and it is smooth. There is slight drooling. The hands and feet are rather thick and broad. They are still moderately dusky and cold. The abdomen is moderately prominent. At this time she has twelve teeth, which are not well occluded. A study of the osseous centers shows her to be delayed about six months in the regular presentation. She has been given the thyroid substance, 3 grains daily at present, and has at no time shown any signs of overdosage.

Billy S. Male. Age five years.

Family history: Father living and quite well, of medium build, and would be grouped as a peculiar individual with a so-called psychopathic personality. However, he commands a good occupation. The mother is living and well, and seems moderately alert.

The child was first brought to us in June, 1927, because of the fact that he was unable to talk very well. The past history showed him to be about one month premature, uneventful delivery, and weighing five pounds at birth. Feeding history was very irregular. It seemed that he would not nurse the breast. Finally he was fed a cow's milk mixture and oatmeal gruel, upon which he thrived—weighed 10 pounds at six months, 18 pounds at one year. He was always very apethetic, took very little notice of his surroundings, and could not sit up until he was almost a year old, did not walk until he was two years old He had the first teeth at about one year. He tried to begin talking at about 2½ years, making harsh, gutteral vocalizations. He had been very susceptible to nose and throat infections. The appetite has been rather capricious and he tends to be constipated.

Examination at this time showed a mentally defective youngster who cooperated poorly and was very apethetic. The physical examination was generally negative except for infected tonsils and adenoids. He was 35½ inches tall and weighed 30 pounds. The blood Wassermann was negative. Urinalysis was negative. The hemogram showed a moderate degree of anemia.

Study of the osseous centers at the age of 4½ years showed him to be delayed about one year. Tonsillectomy and adenoidectomy was advised and performed. Thyroid medication, grs. ¼ twice daily, was begun.

We feel that the boy has responded very nicely to this treatment. He soon became more alert, was more active and could amuse himself almost entirely. He has become able to make his wants entirely understood and plays very well with the children of the neighborhood. His speech difficulty is still rather marked. However, he is able to use small phrases and many words. The grunting, guttural quality of his articulation has been overcome. In June, 1928, he weighed 33 pounds and 8 ounces and was 37¾ inches tall. In September of 1928 he weighed 32 pounds and 14 ounces and was 38 inches tall. At this time he is taking 2 grains of thyroid daily. We have been very well pleased with the progress made in this case.

CHRONIC INTERLOBAR EMPYEMA COMPLICATING LUNG ABSCESS*

JOSEPH A. WEINBERG, M. D.,
Omaha, Nebr.

I desire to present this case because the pathology is so unusual and because it is an example of what may be accomplished in seemingly intractable cases of chronic empyema. Formerly these cases were treated by some form of collapsing operation as the Estlnader or Schede procedure. Such treatment had the disadvantage of high mortality, loss of function of the lung and extreme deformity. The new era of thoracic surgery has brought about a radical change in the method of attack. Instead of bringing the chest wall to the contracted lung, the lung is brought out to meet the thoracic wall. This is accomplished by multiple operations which may be interrupted at any stage, an open thoracic wound during the intervals between operations, and Carrel-Dakin treatment.

CASE REPORT:

Mrs. Maude A., age 34, entered the University of Nebraska Hospital on July 3rd, 1928, complaining of productive cough, expectoration of offensive pus, pain in the left thorax and weakness. She gave a history of having been in the University Hospital in January, 1927, for the removal of a diseased ovary and tube. A week after this operation a tonsillectomy was performed under ether anesthesia. Ten days after the tonsillectomy she "caught cold" (as she described it) and developed a cough which became progressively worse and reached its climax with the coughing up of a large quantity of foul material. X-ray examination on February 9th showed a lung abscess at the posterior of the lower part of the upper lobe of the left lung. Purulent sputum contained streptococcus hemolyticus. She showed no improvement during the next few months and had recurrences of profuse expectoration of foul pus at intervals of a month or two, with weakness and symptoms of sepsis when the abscess was not draining. X-ray examination on April 3rd, 1928, showed the lung abscess persisting and an extensive pleural thickening in the region of the abscess. Operation was advised at this time but was refused by the patient. Repeated examinations had been made up to this time for the presence of the tubercle bacillus and all were negative.

On July 3d when I first saw the patient she was markedly emaciated and showed evidence of sepsis from pus absorption. There was typical clubbing of the fingers. She was expectorating about a quart of offensive purulent material every twenty-four hours. The entire left thorax was dull to flat on percussion. Breath sounds were absent over the lower part of the thorax and diminished over the upper part. X-ray examination on July 5th showed a lung abscess with little demarcation and diffuse clouding of the lower half of the left thorax. There was marked thickening of the pleura at the interlobar fissure extending upward and backward from the area of increased density. On the basis of these findings the condition was diagnosed as lung abscess complicated by interlobar and extralobar empyema, with pus in the pleural cavity. It is evident that the patient had a lung abscess which first perforated into a bronchus and later perforated into the pleural cavity, thus establishing a communication between the pleural cavity and the bronchus. Her white blood cell count at this time was 11,000 per cubic milimeter, red blood cell count 3,900,000 hemoglobin 75. The urine was normal. The temperature was irregular, the high point varying from day to day between 98 and 100.

The first operation was performed on July 11, 1928, under nitrous oxid-oxygen anesthesia. A four inch skin incision was made along the ninth rib from the posterior axillary line to anterior axillary line. Three inches of the ninth rib was resected and the pleural cavity exposed. A localized empyema was encountered. This communicated with a bronchus. A soft rubber drain was inserted at this stage and the operation stopped because of rising pulse and respiration. (150 and 48). Rubber dam was used for drainage. I have found that stiff rubber tubes are highly irritating to the pleura and may greatly increase the thickening already present. Carrel-Dakin treatment was used for two days following operation but was stopped because of irritation of the bronchus. Boric acid solution was used for irrigation. With a cooperative patient it is often possible to use Dakin solution in the presence of a bronchial fistula. But in this case the irritation induced such severe spasms of coughing that it was considered unwise to continue with it. After two weeks her condition was sufficiently improved to warrant continuing the operative treatment.

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*From the University of Nebraska College of Medicine.

*Read before the annual meeting, Nebraska State Medical Association, Omaha, May 16, 1929.

The second operation was performed on July 25th, two weeks after the initial operation. A two inch skin incision was made at right angle to the first incision. One inch more of the 9th rib and 4 inches of the tenth rib were resected. Several abscesses were encountered in the pleural cavity and were drained. Then the upper and lower lobes were separated in the anterolateral region and several ounces of foul pus was evacuated. Soft rubber drains were placed in the wound. Following this operation Dakin solution was again used but the bronchial fistula necessitated changing to boric acid solution irrigations.

The third operation was performed 12 days after the second. The interlobar abscess was further explored through the same wound. A large irregular abscess was found in the upper lobe communicating with the empyema cavity by a small sinus. The abscess was freely opened to the outside. A partial decortication was performed and the wound packed with gauze to check hemorrhage. The visceral pleura was fully one centimeter thick in the region and was extremely indurated. The communicating bronchus was partially constricted by means of a chromic ligature. There was very little purulent exudate following this operation, either through the bronchus or the external wound. Boracic acid solution was used as before. On August 25th (19 days after the 3d operation) the patient was dismissed with no expectoration of pus and with the bronchial fistula closed. The lung was not expanded, leaving quite a large cavity.

A fourth operation was performed on September 5th. Thickened pleura was removed over several square inches of lung by cross-hatching and removing the blocks of pleura. Gauze drains and rubber dam was inserted to arrest hemorrhage. She was dismissed on the 19th day following the operation with slightly irregular temperature but feeling well. The wound was completely healed after three months. She has been seen at intervals of about a month and at the present time has the appearance of complete recovery. The lung has expanded to fill the pleura cavity, there is no purulent expectoration, and she is able to work every day without fatigue or discomfort. X-ray examination at this time shows no evidence of active pathology.

In this case we have a rather complicated picture. Most cases show a much simpler pathology. But all have certain features in common. The important features are collapsed lung and thickened infected pleura. If the lung tissue is not greatly fibrosed, and it usually is not, it will expand provided the infection is properly drained, and the thickened pleura removed. Not long ago I treated a case in which the right lung was completely collapsed and was so completely covered with thickened pleura that it was difficult to locate the lung even with wide exposure. The empyema had been present for six months. After decortication the lung expanded to completely fill the pleural cavity.

No case of chronic empyema can be considered cured unless the lung has expanded to fill the cavity. If the thoracic wound is closed over a dead space, abscesses will reform. Therefore, it is not wise to close the wound at any stage. It will close of its own accord when the infection subsides.

DISCUSSION

C. B. PIERCE, M. D. (Omaha): I should like to emphasize several things Dr. Weinberg has said. In regard to the lateral view of the chest, bear in mind one of the first signs, if there is thickening in the pleura or definite pathology behind the heart, that will appear more or less in this fashion. (Illustrates on blackboard). This area will be described by a heart shadow. One will not know whether it is thickening or exudate in spaces between the visceral and parietal pleura. If one makes a lateral projection of the chest, he has a beautiful exposure of the postcardiac space. So we can make an inference as to the character of the trachea and the condition of the parabronchial structures going to the left, and as to whether the thickening is in the fissure itself or a total obstruction due to the exudate between the visceral and parietal pleura.

JOHN F. ALLEN, M. D. (Omaha): My only reason for rising to discuss this paper is that I had seen the patient on several occasions for sometime previous to her admission to the hospital on Dr. Weinberg's service. I was a little late and did not get to hear the first part of Dr. Weinberg's paper. There is a history in this case of having been in the hospital several months previously for some minor surgical operation, and afterwards developing signs indicating the probability of pulmonary abscess. After discharge from the hospital, she was under observation by us as an out-patient for several months, during which time there was not a great deal in the way of constitutional manifestations, such as fever, and the expectoration was not great. We looked upon it as a lung abscess which we expected to recover spontaneously.

During that time several sets of films were taken by Dr. Pierce. Ultimately it was apparent from the films and the increase in sputum that the lesion was spreading rather than improving. I then had her at the University Hospital with the idea of attempting a pneumothorax. Her general condition was rather good and the indications were that the lesion was not superficial, that is to say peripheral. It seems, however, that she was influenced by someone to leave the hospital without such treatment having been attempted. It was some weeks after that I learned her condition was very much worse, and I advised that she be admitted on the surgical service. The case as presented by Dr. Weinberg is certainly a splendid example of the results obtainable as a result of well planned surgical intervention.

If I may say two or three words on the general classification of lung abscesses, I should like to do so at this time. In this case there was a period when we believed an attempt at collapse by pneumothorax was indicated, the x-ray findings not indicating that the abscess had not necessarily approached the peripheral lung. That simply means that in deep-seated abscesses in which an adhesive pleurisy has not occurred, an attempt at collapse therapy is indicated and justifiable. In abscesses which are peripherally located or have approached the periphery an adhesive pleurisy, of course, results, and there is no indication for attempt at collapse by pneumothorax. That is the condition, of course, which had finally developed when this patient was admitted on Dr. Weinberg's service.

We had the pleasure a few days ago of hearing the paper by Dr. Hedbloom which I considered a very sensible and comprehensive discussion of the indications for treatment in the various forms of pulmonary abscess. I think we may say there are two types of pathology, generally speaking, or two types of cases rather; the one which may be classed as medical, in which in reality recovery results spontaneously, and the other which is non-medical, which does not tend to recover and soon becomes a surgical problem. As to the elements which determine in the beginning whether or not a case may be expected to recover spontaneously, or whether it must be considered surgical, certainly the matter of location—as to whether it is deep-seated or superficial, and as to what part of the lung is involved—is very important.

I have seen two cases in the past few weeks in which the location of the abscess is above the level of the lung roots. It seems to me that our chances for natural drainage in such cases is better than if the pus is situated below the level of the lung roots.

I recalled having seen Dr. Weinberg's case once or twice during her stay in the hospital, and recalled especially a time when there was a rather complete exposure of the lung with two small bronchial fistulae. The question at that time was that of attempting to close these tracts, and I doubted the advisability or possibility of accomplishing this. As is usually the case, they were indications of small underlying abscesses, which, when opened and drained freely, healed and closed spontaneously. This appeared to be the beginning of the final, rapid recovery of the patient.

DR. WEINBERG (closing): I wish to thank Dr. Pierce for bringing out better than I could the value of the x-ray in these cases. It is needless to say more on the subject. It is our most valuable means of determining what should be done.

In regard to lateral and anterior-posterior views, one is not satisfactory, as this case shows.

I wish to thank Dr. Allen for giving us the earlier history of this case. I really think this woman's good recovery is in large measure, at least, due to the fact operation was postponed. She had acquired a resistance which allowed more extensive operative procedure.

A CASE OF A HORSESHOE KIDNEY WITH GREATLY DILATED URETER

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Campbell Clinic,
Norfolk, Nebr.

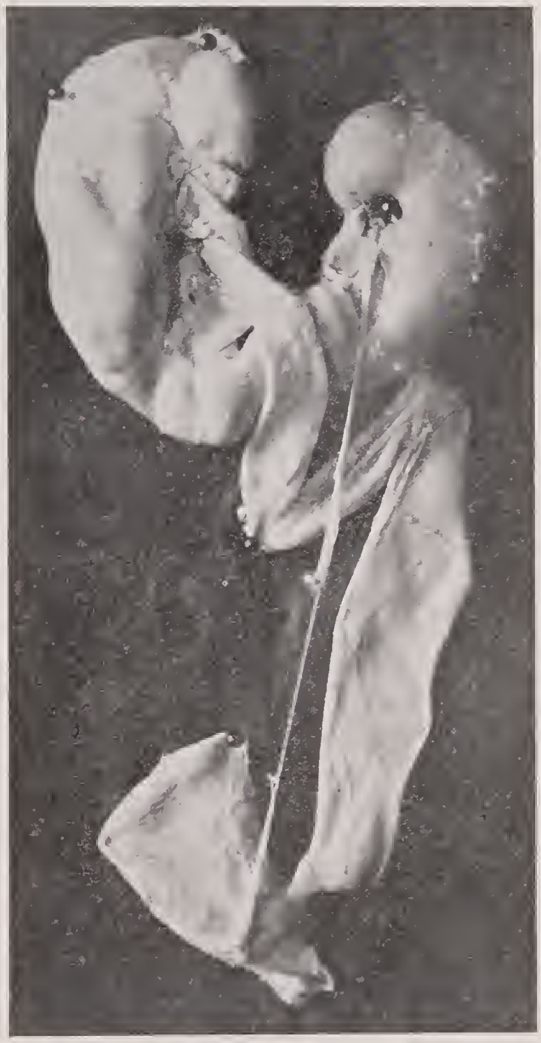
This case is of concern, not only because of the rareness of this type of anomaly, but I find no similar case in the literature; that is, with a dilated ureter. The history of the case is also of interest.

REPORT OF CASE

The patient was a boy, aged 11 months, had always been healthy and normal in every respect. Three days before I saw him, he had appeared slightly ill, had vomited a few times and carried a temperature ranging from 100 to 102 degrees F. At about four o'clock in the afternoon after the parents had thought him better, he had a convulsion. I saw him following this. He was a well developed child appearing acutely ill. On examination, he had a typical respiratory grunt with rales and dulness in the right chest and a palpable mass on the right side of the abdomen from which he flinched when pressure was applied. He continued to have convulsions about every hour with continued Kernig's sign and spastic extremities until we were able to get him under the influence of chloral hydrate and paragoric. The temperature raised and remained at about 106 degrees F. The general appearance of the baby gradually became morbid and he died at ten o'clock the following morning. The diagnosis of consultants, for the most part, was ruptured appendix with an abscess complicated by a terminal pneumonia. Unfortunately we were unable to get a specimen of urine.

AUTOPSY

Report confined to the specimen. On opening the abdomen, a moderate amount of clear, yellow ascitic fluid escaped and a normal appendix came into view. A mass was found lying on the posterior wall along the right side of the abdomen and appeared as a distended bowel, but was found to be retroperitoneal. The entire specimen was exposed. The dilated ureter was found to be filled with a turbid urine which was emptied through the bladder with difficulty, as there was evidence of partial obstruction at the ureteral orifice. This ureter was attached to the right and larger portion which, macroscopically, was very much diseased. The left fused portion had what might be considered a normal kidney and ureter, there being no evidence of disease. There remains a question as to the immediate cause of death, whether due to sepsis, uremia or both.



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THE RECENT MISSOURI VALLEY MEDICAL AT IOWA CITY

With the reorganization of the Missouri Valley Medical Association a policy was developed that programs should be given largely by teachers in the medical schools of this territory so as to make each meeting an authoritative postgraduate course. The idea is above criticism. The meeting at Iowa City the latter part of September was held in one of the teaching amphitheaters of the new University hospital. The attendance was not what had been hoped, but the second day the amphitheater was filled to capacity. The interest of those present was beyond question, for they remained fixed to their seats during the sessions.

Dr. Henry S. Houghton, dean of the college of medicine, speaking on "Postgraduate Medical Instruction", stressed two points: First, an organization of opportunities so that the postgraduate who really has interest will be able to build up a knowledge of associated branches of learning around his medical training; second, that a closer union between those of the medical profession and health projects now directed by the university is desirable.

Dr. George E. Neuhaus, Omaha, dealt with various forms of manic-depressive psychosis.

Dr. J. Jay Keegan, Omaha, talked on traumatic cerebral edema, and encephalitis, caused by head injuries resulting in hemorrhage and concussion. He displayed a number of specimens.

Dr. C. W. Rutherford, Iowa City, spoke on the "Eye Grounds in Nephritis". He developed the idea that the eyegrounds do not always show nephritis and conversely, nephritis is not always shown by the eye grounds.

Dr. E. T. Bell, Minneapolis, speaking on "Lipoid Nephrosis and Glomerulo-nephritis" said lipoid nephrosis may recover, but acute glomerulo-nephritis, never.

Dr. N. G. Alcock, Iowa City, gave an interesting urological clinic during which he presented a patient with a mole on the back over the region of the kidney which on direct x-ray exposure showed a spot simulating a stone in the kidney. Raying from different angles demonstrated what might have caused a serious error.

Dr. Logan Clendenning, Kansas City, spoke of errors of diagnosis and laid particular stress on the errors made by technicians in relying too closely on their own findings.

Dr. Hilding Berglund, of Minneapolis, spoke on "New Possibilities in the Differentiation of the Anemias". He quoted Minot's statement that if a case of pernicious anemia does not respond to liver extract it is not pernicious anemia, and added this was borne out by his own observations.

Dr. David P. Barr, Washington University, St. Louis, related remarkable results from removal of parathyroid tissue.

Dr. J. W. Duncan, Omaha, gave his experiences with spinal anaesthesia which made a very favorable case for this method.

Dr. A. D. Dunn, Omaha, gave a masterful clinic on circulatory diseases.

Dr. H. L. Beye, Iowa City, gave a clinic on burns advocating the ambrine treatment, and presented a number of cases in point.

Dr. Kellogg Speed, Chicago, gave a masterly presentation on the "Unhappy Results in the Treatment of Fractures".

The association dinner was attended by barely seventy-five guests, which seemed a tragedy for there was offered a wonderfully well prepared menu.

Dr. E. D. Plass, head of the department of Obstetrics, University of Iowa College of Medicine, was elected president, and Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, secretary-treasurer. The next meeting will be held at Des Moines.

THE REACTION TO HEALTH EXAMINATIONS AT THE STATE FAIR

The profession will be interested to know that there were 231 adults and 74 children examined by members of our association at the Nebraska State Fair. Of the 231 adults, 200 had abnormal and pathological conditions needing medical attention. To this number the following form letter was sent:

> "The Health Examination which you were given at the Nebraska State Fair revealed certain abnormal conditions which interfere with the normal functions of your body and materially affect your health.
>
> These conditions are remediable if given immediate attention, so if you will send me the name and address of your family physician, your examination record will be forwarded to him and he will give you advice regarding treatment.
>
> Yours very truly,
> Nebraska State Medical Association
> Public Activities Committee
> E. R. Hays, Chairman
> Falls City, Nebraska"

A number of cases of serious illness and disease were discovered in persons apparently in the best of health. Three cases of tuberculosis were found, one case of spinal tuberculosis in the early stages in a youngster two years old, five cases of fibroid tumor, two ulcers of the stomach, two of Bright's disease, one of diabetes, eighteen of high blood pressure and one cancer. One child, thought by its parents to be suffering from asthma and hay fever, proved in his examination to have an enlarged heart. Three cases of contagious skin disease in children were found.

In many persons, minor ailments, pointing to a breakdown within a few years, were determined by the examinations.

Within three weeks one-fourth of the number requested that the record be sent to their family physician.

In all the demonstration was a huge success and shows that people will take an interest in health examinations if the matter is presented in the proper manner.

DEFECTIVE SPEECH IN CHILDREN

Speech is the most valuable of all our accomplishments; yet, according to the U. S. Public Health Service, speech disorders in children have until recently been the most neglected of all hampering defects observed among them. It is estimated that in the United States at least 1,000,000 persons have some form of speech disorder; and of these, approximately 500,000 are school children who stammer or stutter. Uncorrected speech defects observed in childhood become a serious economic and social handicap in later life, because of their bearing on educational achievement and the ability to secure preferential and gainful employment.

Fortunately, the majority of speech defects are functional in character, not dependent on definite organic lesions, and can, therefore, be corrected. Most speech defects develop between the third and eighth year of life.

The more common forms of speech defect observed in children are: (1) Retarded speech; (2) imperfect speech associated with partial deafness; (3) imperfect speech caused by certain malformations of the organs of speech; and (4) the nervous speech disorders, such as stammering, stuttering, and nervous hesitation.

The normal child learns to talk largely through imitation; and when this instinct is lacking, speech development is retarded and there exists a form of speech defect called by specialists "Dumbness without deafness", which requires very careful attention and training. Other causes of retarded speech development are inattention and, occasionally, strange as it may seem, lack of conversation in the home.

The popular belief that children who do not learn to talk at the normal age are mentally defective is responsible for much unwarranted anxiety. While it is true that disordered speech may be an early symptom of mental defect, speech development may be delayed as late as nine years of age in children otherwise perfectly normal.

Partial deafness may also be the cause of speech defect. Most deaf-mutes have perfectly normal speech organs, but do not exercise them because of their inability to hear spoken words. With them the underlying cause of their inability to talk is deafness. Since imitation is such a pronounced factor in the development of speech in children, careful tests should be made of all speech defectives for the discovery of partial deafness which may easily account for the imperfect speech. Such children should always be referred to an ear specialist for treatment; and if treatment is ineffective, lip reading should be taught.

Imperfect speech may also be caused by malformation of the speech-producing organs, such as harelip, very short upper lip, narrow palate, cleft palate, nasal obstruction, tongue-tie, and very irregular teeth. Careful search should be made for the presence of malformations in order that prompt corrective treatment and speech education may be carried out. It is the opinion of a number of specialists that in cleft palate better speech is obtained in those who have not been operated upon than in those who have, when supplied with proper corrective dental contrivance, because the muscles in such cases are free to adjust themselves, eventually resulting in more nearly normal speech.

The most usual form of speech disorder is "stammering" or "stuttering". From the standpoint of development there are two distinct types, one which commences with the development of speech and the other that begins after the child has learned to speak normally. The first form is the most difficult to correct.

The underlying cause of stammering is purely mental. It is essentially due to emotional disturbance, and implies lessened ability to meet a difficult situation. It is most frequently observed in the so-called nervous, highly strung children. As these children grow older they subconsciously fear that their speech organs will refuse to work and have the horror of being the object of ridicule. A sense of inferiority develops, establishing a vicious circle—the greater the dread, the more imperfect their speech.

According to some observers, stammering is more or less common among lefthanded children when they are taught to become righthanded writers. This opinion is largely responsible for the objection to educators attempting to train lefthanded children to become righthanded. It is also believed to be more common among boys than girls.

Parents should not be deluded by any expectation that the "child will outgrow the defect". Only the very mild cases developed through imitation may be said to be outgrown when the increasing mental development of the child enables him to recognize and correct his mistake. On the other hand, the nervous speech disorders, when well developed, are more difficult to correct, because they are curable only by special forms of reeducation. Of late years, because of the growing demand for the treatment of nervous speech defects such as stammering and stuttering, a number of speech clinics have been established through the country, particularly by boards of education in the larger cities, for the correction of speech defects. The wise parents will take advantage of these clinics or will otherwise give attention to the speech disorders of their children in order to remove the handicap in life which these disorders impose.—U. S. Public Health Service.

GERMS BREATHE

At first thought it hardly seems likely that germs could breathe. Yet the fact that they do, and that their respiration can be accurately measured by scientists, offers a field for research which some day may point to a solution of the baffling problem of tuberculosis. Respiration, scientifically, is the taking in of oxygen and the expelling of carbon-dioxide. The process goes on in all living things and is the most distinguishing characteristic between them and inanimate objects. Why this becomes important in the activity of the tuberculosis germ requires a few words of explanation.

The bacillus of tuberculosis must enter a certain cell in the body known as the monocyte or it is harmless. It must continue to live there. Not all tuberculosis germs succeed in doing this. Just why some are able to establish this alliance for the destruction of man while others fail, is the pivotal question which has not yet been fully answered, though research workers are accumulating a multitude of detailed facts in their laboratories out of which that answer may be expected to come. This much is known: Germs of the same strain have the same respiration rate and are uniform in their affinity for, or repugnance to, particular monocytes. But germs of different strains, having different respiration rates, may differ under like conditions. So research investigations are trying to upset the unhappy marriage of some germs and some monocytes by altering their respiration rates and rendering them incompatible.

Progress has been made. For the last seven years a group of leading scientists drawn from many departments of knowledge, and affiliated with various institutions of learning throughout the country, have been engaged in a cooperative investigation of tuberculosis, for this purpose calling themselves the Research Committee of the National Tuberculosis Association. These men, under the leadership of Dr. William Charles White of Washington, D. C., as chairman, have received no compensation for their work, but actual laboratory expenses have been met from money raised each year in the Christmas Seal sale. The object of this research, of course, is to find some method to extirpate the disease. While this has not been achieved, two discoveries in the year last past have made valuable contributions to the war on tuberculosis.

Tuberculin, the substance used in the test for detecting tuberculosis in human beings as well as cattle, has been reduced to absolute purity, something never before achieved, so that it can now be supplied wholly free from other substances which affected the accuracy of these tests in the past. The details of this process were worked out by Dr. Esmond R. Long and Dr. Florence B. Seibert, of the University of Chicago. The second research achievement consisted of the production of a wholly new mechanism for testing the individual for the presence of tuberculosis, which renders the detection of the disease possible within three or four days of infection instead of an average of two months afterward, as is at present the case. This work was achieved by Drs. Florence R. Sabin, C. A. Doan and C. E. Forkner, of the Rockefeller Institute for Medical Research.

Diagnosis of tuberculosis will become much more exact by reason of the perfection of tuberculin to crystalline purity. Particularly in the examination of children suspected of infection will the new tuberculin be of great value, for heretofore it has not been certain, in the individual case, that a positive reaction was not caused by one of the various impurities which were known to exist in the tuberculin used. The skin test has always probably been complicated by elements in the test fluid other than those which indicate the disease. This development will also affect directly the testing of cattle, and reduce the number of animals which are slaughtered because they react positively to tuberculin and yet show no signs of tuberculosis.

The new test devised for the earlier diagnosis of tuberculosis by members of the Rockefeller Institute utilizes a small quantity of the blood of the patient. The red corpuscles are removed and the remaining serum diluted and placed in a test tube containing one of the fatty fractions of the tuberculosis germ, known as phosphatide. If the patient has tuberculosis there will be a precipitate, but if the disease is not present, nothing at all will occur. This new test will also be of use in distinguishing between cases of meningitis which are tuberculous and those which are not, something which science has heretofore been unable to do early in the disease and accurately.

The "chemical Jury" of the Research Committee which established the base line for these studies includes: Dr. Allen K. Krause, Johns Hopkins Hospital; Dr. Esmond R. Long, University of Chicago; Drs. Eugene L. Opie, H. R. M. Landis and Charles J. Hatfield, Henry Phipps Institute; Prof. Treat B. Johnson, Yale University; Prof. Hans Zinsser, Harvard Medical School; Prof. John J. Abel, Johns Hopkins Medical School; Prof. A. N. Richards, University of Pennsylvania; Dr. Linsly R. Williams, National Tuberculosis Association; Dr. William Charles White, Washington, D. C.

RELATION BETWEEN MENTAL AND PHYSICAL STATUS OF CHILDREN

In studies recently reported, a group of school children in two counties of Illinois were examined physically by medical officers of the United States Public Health Service and were given mental tests by psychologists and other trained personnel of the Illinois State Institute for Juvenile Research. Neither examiner knew the results of the other test at the time the examination was made.

The mental examination was a group test, supplemented by an individual test for children who made a low score on the group test. A comparison of the group test results with indications of school progress, such as grades repeated or skipped, average rating on the school report card, and the teacher's estimate of the child's intelligence, reveals considerable correlation between the intelligence quotient and these factors. In this study the intelligence quotient was therefore taken as the indicator of the child's mental status in considering the relation of the mental and physical status of the children.

An examination of the variation in the intelligence quotient for different groups of children indicates that each of the following factors has some relation to the intelligence quotient: Race, color, nativity, language used in the home, occupation of the father, age and place of residence of the child. An analysis of the intelligence quotient of children classified according to these various factors suggests that the intelligence quotient is definitely influenced by the child's experience, training, and other environmental conditions including his home surroundings. Under these circumstances it appears from this study that the intelligence quotient is an indicator of the child's total present mental equipment rather than of his "native" intelligence, apart from his training and experience.

The prevalence of physical defects among children of low intelligence quotient was compared with that among children of average and high intelligence quotient. The average number of physical defects decreases as the intelligence quotient increases. This tendency seems to be independent of race, language, and other similar factors.

Children of native white parents were classified into three intelligence quotient groups, viz, below average (under 90), average (90 to 109), and above average (110 and over). For each of these groups there was computed the percentage of children who were found, on physical examination, to have certain physical defects. For a large number of defects the prevalence among children below average intelligence quotient was slightly greater than among children above average intelligence quotient, the prevalence among children of average intelligence quotient usually falling between the other two rates. No particular defect, with the possible exception of defective hearing, stands out as having a particularly close relation to the intelligence quotient. The relationship between the intelligence quotient and physical defects appears to be of a general rather than a specific nature.

The mean measurements of children in these same three intelligence quotient groups were compared. The mean measurements of the group of children with intelligence quotient above average are slightly greater than the mean measurements of those below average. Although slight, the differences are fairly consistent in the various age groups for each sex, and are true of nearly all the physical measurements that were taken in this study.

In view of the fact that the intelligence tests used in this study appear to be indicators of total mental equipment rather than "native" ability alone, the slight tendency for a higher intelligence quotient to be associated with better physical condition and development might be interpreted in several ways: (a) The handicap due to physical defects may result in slower mental development; (b) the children who are low in mental development may tend to come from families whose innate or constitutional physical characteristics are also below average; (c) the slower physical and mental developments may both be the result of other factors with which both are correlated, such as adverse conditions of various kinds. From the data at hand it is impossible to say which if any of these interpretations is correct, but it is possible that each of them may contain some truth.—U. S. Public Health Service.

EDITORIAL PARAGRAPHS

A cheese is made in China from the protein of soybean.

There is a wide difference between surgeons and operators.

Physical diagnosis is the most important study in the medical curriculum.

A friend who is a goat fancier says he puts iodine solution on the goitrous swellings of his goats and cures them!

Fire crackers are doomed to banishment and we should be glad of it. The toll in life and injuries has been too great.

It is announced that the next meeting of the American Medical Association will be held at Detroit, June 23-27, 1930.

In connection with the work of the compensation commissioner of Nebraska a compensation clinic has been organized to study difficult cases.

It has been demonstrated that if a part of the liver is removed the remaining lobes hypertrophy, thus restoring the liver to nearly normal size.

Renewed efforts are being made by the Kiwanians to aid under-privileged children. A campaign has been promoted for the purpose stated.

The laboratories of Creighton University College of Medicine have been enlarged to twice their former capacity and 100 freshmen were admitted this fall.

Creighton University featured a series of Health Talks from September 30 to November 7. The lectures were in three series of eight each, under the direction of Dr. Victor E. Levine.

The fossil skeleton of a giant hog which stood seven feet tall has recently been mounted in Morrill hall, University of Nebraska. It was discovered in the famous fossil beds of Northwest Nebraska, at Agate.

The *Journal American Medical Association* announces an advance of the subscription price, including fellowship dues, to seven dollars. The expansion of the work of the association, it is said, makes this imperative.

A Morbidity Summary from the state bureau of health tells us that not a case of poliomyelitis was reported in Nebraska during August and September of this year, as against 16 during the corresponding period in 1928.

A hospital for women doctors which has been a serious problem in New York city is about to be solved by a fund of $3,000,000 being raised. Mrs. F. A. Vanderlip, wife of a well known financier, is heading the movement.

Dr. P. H. Bartholomew, chief state bureau of health, is doing much work toward educating the people to observe quarantine regulations and toward injecting the needed pepper and sauce into county and town health organizations.

Indiana, Michigan and Wisconsin have removed the speed limit, but provided severe penalties for reckless driving. Iowa modified the speed law so it applies only to vehicles weighing above three tons. We have reached the sane age in traffic regulation.

Among the seventeen consultants called upon by the American Medical Association in the preparation of their volume "New and Nonofficial Remedies, 1928, we find listed Dr. Alfred Hess, of New York, Dr. Russel M. Wilder of Rochester, Minnesota, Dr. Elliott P. Joslin, of Boston, and our own Dr. Victor E. Levine of Omaha.

It is reported that 800 prospective students presented themselves to one of the medical schools of this state, only 100 of whom could be admitted owing to the limit of space provided for students. If there is a shortage of medical doctors it is evidently not due to want of effort on the part of young people looking toward medicine as a career.

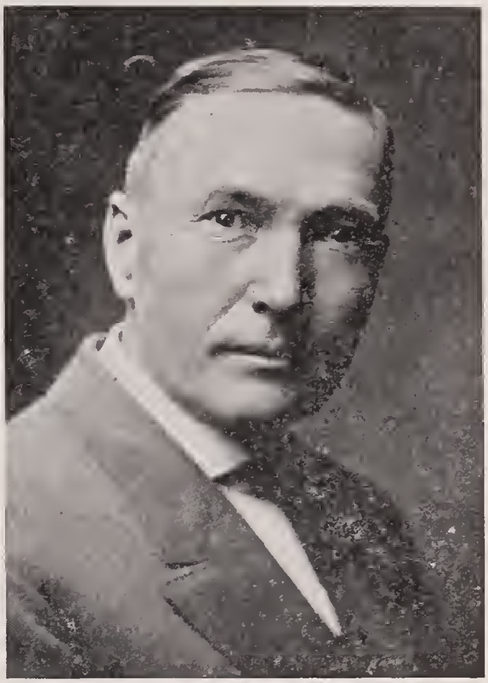
An unlettered "herb doctor" was arrested, tried before a jury, found guilty and fined $100 and costs. He promptly paid the fine and costs. He was much disturbed, however, over two things: He thought the $100 fine was distributed among the jurors, and when someone told him he had violated the law and deserved the fine for practicing without a license he responded, "Vell, vy not dey gife me a license, I am ready to take vun?"

The problem of the girl smokers: Well, why not let them smoke unmolested for smoke they will, college rules or no rules. As well make up your mind that the woman smoker has come, and get used to it. "Stone walls do not a prison make, nor iron bars a cage". We may be disgusted at the sight of the young—and older—darlings smoking, but we must concede them the same right that men have. If men get comfort out of smoking, why deny it to women?

A new humidifier called the Vaporflo has appeared. A retort of cast iron is inserted in the firepot and connected to the circulating water of the house. It is controlled by a check valve and float which provides for the entrance of cold water and allows the steam to mingle with the air thus restoring atmospheric balance, so says the circular. Let us hope it does just what is claimed. Experiments made some years ago seemed to demonstrate conclusively that if enough vapor is allowed to flow into the house to restore the atmospheric balance the windows will fog and, conversely, if not enough is allowed to flow in to fog, then no good is accomplished.

DR. EDWARD TANNER, BATTLE CREEK, COMPLETES FIFTY YEARS OF PRACTICE

A testimonial dinner was given by twenty-seven physicians of Madison county and their wives, (in all forty-seven persons), to Dr. Edward Tanner, Battle Creek, Nebr., and his wife, on the evening of October 3, at the Hotel Norfolk, celebrating Doctor Tanner's completion of fifty years of practice of medicine.



DR. EDWARD TANNER

Dr. Tanner was born at Lacona, N. Y., in 1855, attended high school in his home town, spent one year at Union College, graduated at the University of the City of New York in 1879, practiced at Denmark, N. Y., one year, came to Norfolk, Nebr., in January, 1881, and located at Battle Creek in June, 1881, where he has remained in practice since.

It was said at the dinner that those who have known Dr. Tanner intimately, know that he has always been a good diagnostician, an able and conscientious practitioner, industrious, quiet, unassuming, always well liked by the people of the community, and that no one was ever heard to speak ill of him.

HAS RESIGNED

To the Editor of the Journal:

I wish to inform the subscribers of the Medical Interpreter that I resigned as editor of this publication in December, 1928, and that I am no longer responsible in any manner for the actions of its promoters.

Albert Alleman, M. D.,
Washington, D. C.

THE WORLD'S PHYSICIAN

GORGAS MEMORIAL INSTITUTE, AT WASHINGTON, D. C., OBSERVES 75th ANNIVERSARY OF BIRTH OF WILLIAM CRAWFORD GORGAS

October 3rd commemorates the 75th anniversary of the birthday of one of the great chevaliers of medical science—William Crawford Gorgas, physician, sanitarian and army officer, who freed Havana and the Panama Canal Zone of yellow fever.

The Gorgas Memorial Institute, with headquarters at 1331 G Street, N. W., Washington, D. C., founded to honor the name and achievements of Dr. Gorgas, makes the announcement that during the past year the two-fold purpose of Gorgas, Health Education and Research, has been carried forward in an active program which has benefitted directly and indirectly the profession of which he was a member.

The program of Health Education has been accomplished through several mediums: The press, the speaking platform, the radio and through high school essay contests. Many physicians have aided in the performance of this great health task. Some have written health stories in terms of lay English, which have been released through the regular publicity channels of the institute; some have assisted the Speakers' Bureau of the Gorgas Headquarters in arranging opportunities for the caravan health speakers; some have written medical articles for radio release, and a few have been of material assistance in bringing the high school essay contest, conducted during the past year, to the attention of the schools of their respective cities.

The records show that the following states have heard the Gorgas Message of Preventive and Scientific Medicine from the speakers platform during a period of a little more than a year: Delaware, Florida, Illinois, Iowa, Ohio, Massachusetts, Michigan, Minnesota, New York, North Carolina, Virginia, Washington, Oregon, Pennsylvania, Kentucky, Indiana, West Virginia, Vermont, New Hampshire, Maine, Connecticut, Georgia, South Carolina, Arizona, and California —a total of 25 states. A total number of 454 talks have been made by caravan health speakers, with a total known audience of 146,246. Health Corps have been organized in 72 cities, 40 newspapers have been added to the Gorgas syndicate, 3,830 health posters stressing the importance of the periodic health examination have been distributed and displayed, 5 special radio talks have been made in addition to the regular weekly radio health talk which is made over 22 of the leading stations of the country, and a special health film has received 55 showings to an estimated total audience of 29,243. A field program of this size has been made possible largely through the generous financial contribution of the Metropolitan Life Insurance Company.

A very successful high school essay contest was conducted during the past year in which 1 out of every 100 high school pupils in junior and senior classes submitted an essay on the subject "The Life and Achievements of William Crawford Gorgas and Their Relation to Our Health". One of the chief phases touched on in this contest was that of the necessity of regular periodic health examinations by the family doctor. The local prize winners received a Gorgas Medallion, the state winners checks for $20 and the national winner of first prize received $500 and travel allowance of $250 to come to Washington to receive the prize. The second national prize winner was given a cash prize of $150. These prizes were given by Mr. Charles R. Walgreen of Chicago. President Hoover, Honorary President of the Gorgas Memorial Institute, presented the national award at the executive offices in the presence of a distinguished company of guests.

The research work of the memorial has been given an added impetus through the gift by the Government of Panama of a beautiful edifice which houses the laboratory in Panama. The 70th Congress of the United States made an annual appropriation of $50,000 for the maintenance of this laboratory and Latin-American countries will contribute a pro rata share on the basis of population to the support of this project. Dr. Herbert C. Clark, noted scientist, formerly of the United Fruit Company, assumed his duties as director of the laboratory on January 1st. A consulting board from each Latin-American country cooperating will be appointed by the respective governments to aid Dr. Clark in his work. The Gorgas Memorial Laboratory will point the way toward better personal health from the place where the one whom it honors performed a miracle of science by making practical application of the Walter Reed theory of the transmission of yellow fever. The nations represented in the enterprise are banded together as brothers to make war on the scourges of disease. While they do not always see eye to eye on questions of international politics, in the name of Gorgas they are in this undertaking as an agency of welfare, and, therefore, an agency of greater efficiency and happiness for the human race.

President Hoover is the Honorary President of the Institute and Vice President Charles Curtis is a member of its board. At the last annual meeting held in Boston, Rear Admiral Cary T. Grayson, "Physician to Presidents", was elected the active president of the institute and Dr. Franklin Martin, president of the American College of Surgeons, was elected chairman of the board. Dr. Bowman C. Crowell of Chicago was appointed chairman of the Scientific Board which will direct the policies of the laboratory. Outstanding physicians, dentists, scientists and statesmen comprise the board, and an advisory council is composed of members of the diplomatic corps of the various Latin-American countries.

The great work of this organization will be carried on with renewed effort during the coming year. It is the duty and privilege of the medical and dental professions to cooperate, not only because of the ultimate benefit to these professions themselves, but because of the crying need of a campaign of this sort for the better personal health of our people everywhere.

In this way can the deeds of a great man live after him, his most fitting monument.

DAWSON COUNTY ORGANIZES AUXILIARY

The Dawson County Medical society, at the meeting held at Cozad, had the wives of its members as guests. Mrs. F. A. Long, Madison, (who, with her husband, was a guest of the society), was called on to talk on the advantages of an Auxiliary. While the doctors held their business meeting, the women got together and organized The Woman's Auxiliary of the Dawson County Medical Society. A temporary chairman was elected and permission of the medical society was asked and granted to proceed with the organization.

Mrs. R. S. Wycoff, Lexington, was elected president; Mrs. H. M. Harvey, Gothenburg, vice president; and Mrs. A. W. Anderson, Lexington, secretary-treasurer.

Several registered nurses who were present joined as associate members.

THE SOCIETIES

Meeting of **The Omaha-Douglas County Medical Society,** October 8, 1929. The guest speaker of the evening, Dr. George W. Crile, of the Cleveland Clinic, was introduced by Dr. C. A. Roeder.

Dr. Crile spoke on the very interesting topic of peptic ulcer. He brought out the hypothesis that peptic ulcer may be the result of the difference in potential in the interaction between the acid gastric contents and the alkaline duodenal contents. He also brought out the fact that the thyroid gland activates the charging system whereas the adrenals help in the discharging. Cases were cited wherein remission from peptic ulcer was brought about by extirpation of a part of the thyroid gland and also one of the adrenals.

The paper was discussed by a number of physicians present. The discussion was followed by a few brief remarks by Dr. Crile.

Over four hundred doctors listened to this lecture by Dr. Crile, of which approximately two hundred were out of town guests from Iowa and Nebraska.

—Herman M. Jahr, Secretary.

At a special meeting of the **Lancaster County Medical Society** on September 24, 1929, Dr. Henry W. Cattell of Philadelphia was entertained at dinner at the University Club. Following the dinner the society met in the Sharp building to hear Dr. Cattell on "The Personality of William Osler". The speaker was introduced by Dr. David C. Hilton who mentioned some of the background and accomplishments of our distinguished guest. The address was a personal reminiscence of Sir William, going back to the early days in Philadelphia, and many interesting incidents in the life of Osler were brought out in illustration of his unusual personality. Following the address of the evening Dr. S. E. Cook told some of his personal experiences with Osler as a teacher at McGill.

No business was transacted.

—Roy H. Whitham, Secretary.

The **Seward County Medical and Dental Society** met at Seward, Sept. 24, the Seward profession being hosts at a dinner preceding the program. The principal papers were given by Dr. Sidney Reese and Floyd Rogers, Lincoln, the former, "Cancer of the Colon", and the latter, "Rheumatic Fever", which were much enjoyed as both were along practical lines and of great benefit.

—C. W. Coty, Secretary.

The **Madison Five Counties Medical Society** held its September meeting at Creighton on the 24th. The meeting was well attended and a dinner was enjoyed before the meeting opened. The program follows: "Impressions of Pediatric Trends", A. J. Schwedhelm; "Colon in Relation to Gastric Symptoms", Dr. Francis D. Heagey, Omaha; "Experiences in the Treatment of the Psychoneuroses", Dr. Alexander Young, Omaha.

The **Ninth Councilor District Medical Society** held its annual meeting at Kearney, October 10. Sixty doctors and their wives attended. Dinner was served at the Country club. Officers elected: Dr. E. E. Clarke, Burwell, president; Dr. W. E. Rose, Kearney, secretary-treasurer (re-elected).

The program was put on by Drs. J. J. Keegan and Henry Taylor, Omaha. Dr. Henry Farrell, Kearney, gave an interesting talk on his European travels.

The **Dawson County Medical Society** met at Cozad, October 19, in the basement of the Methodist church. Dinner was served to 20 physicians and their wives. Dr. F. A. Long, Madison, gave an address on "Medical Economics and the Country Doctor". Mrs. F. A. Long talked about the work of the Auxiliary and the ladies forthwith decided to organize an auxiliary for Dawson county.

The Ninth Annual meeting of the **Seventh Councilor District Medical Society** was held at Crete, Oct. 24. The program follows: "Spinal Curvatures, and Treatment by Corrective Exercises", A. N. Anderson, M. D., Belvidere; "Case Report", R. K. Johnson, M. D., Friend; "The State Bacteriological Laboratory", L. O. Vose, Dept. of Public Welfare, Lincoln; "Coronary Sclerosis", G. W. Covey, M. D., Lincoln; "Arrhythmias and Cardiac Therapy", A. Sachs, M. D., Omaha; "Injuries of the Newborn Child During Birth, and Their Treatment". Illustrated by DeLee Motion Pictures. Elmer M. Hansen, M. D., Lincoln; address, "State Medicine", Palmer Findley, M. D., Omaha. The Saline County Medical Society was host at a dinner at the Commercial hotel.

The **Cedar, Dakota, Dixon, Thurston and Wayne Counties Medical Society** held its third quarterly meeting at Walthill, Sept. 19.

The program consisted of a paper on "Hip Fractures" with illustrative slides by Dr. Arch O'Donoghue of Sioux City; a report of two cases of Vitiligo cured by internal medication, by Dr. H. W. Francis of Bancroft; and the demonstration of several clinical cases from the Winnebago and Walthill hospitals.

—C. L. Phillips, Secretary.

HUMAN INTEREST TALES

Dr. D. D. Davis, formerly of Lincoln, has located at Pender.

Dr. F. A. Paden has moved from Hartington to Brownsville.

Dr. G. B. Groves, formerly of Des Moines, has located at Wayne.

Dr. L. C. Barrett, recently from Chicago, has opened offices in Benson.

Dr. Arnold Mullman, a former Lyons boy, has located at Talmage.

Dr. John Christleb has become associated with Dr. W. H. Melcher, Omaha.

Dr. A. A. Blum has located at Dodge. He comes from St. Mary, Kansas.

Dr. W. N. Ramey, Lincoln, submitted to an operation for appendicitis recently.

Dr. S. F. DeVore, formerly of Missouri Valley, Iowa, has located at Hartington.

Dr. Amy Chapman, for twenty years in practice at Hastings, has located at Franklin.

The marriage of Dr. J. W. Hellwig and Miss Irene McCoy, Omaha, has just been announced.

Dr. F. A. Brewster, Holdrege, has used an airplane in his practice for long trips for the last ten years.

President-elect K. S. J. Hohlen and wife, Lincoln, have gone to Europe for a period of study and travel.

Dr. D. H. Morgan and wife, McCook, have gone to Europe where the doctor will pursue postgraduate study.

Dr. L. W. Elwood, formerly of Silver Creek, has located at Osceola, not Geneva, as stated in a previous number.

The International Clinics for September, 1929, contains an article by Dr. Victor E. Levine on "Treatment of Anemia".

Dr. John H. Scheidt, for the past year located at Kimball in association with Dr. Miller, has located at Platteville, Colo.

Dr. George W. Covey, has been appointed chief of staff of the Lincoln General hospital, succeeding the late Dr. J. M. Mayhew.

Dr. and Mrs. Frederick Niehaus, Omaha, have gone to Europe for a six months stay, the doctor occupying the time in study at Vienna.

Dr. B. F. Bailey, Lincoln, was elected president of the American Interprofessional Institute at the annual meeting at Duluth recently.

Dr. E. O. Weber, Wahoo, has been named chairman for Saunders county of the Nebraska Diamond Jubilee to occur in Omaha, November 5-7.

Dr. F. L. Frink, Newman Grove, was elected vice commander of the Nebraska division of the American Legion, at the annual meeting recently.

The wedding of Dr. Ramey M. Baker, senior at the Nebraska University College of Medicine, and Miss Marie Turner, Omaha, is announced.

Dr. and Mrs. E. R. Hays, Falls City, attended the American Public Health association's annual convention at Minneapolis, the first of September.

Dr. John S. Latta, professor of anatomy in the University College of Medicine, has been appointed to membership on the basic science board.

Dr. Robert Estill, Bridgeport, has been appointed to a position in the medical corps of the army as a lieutenant and assigned to Fitzsimmons hospital, Denver.

Dr. I. W. Haughey, for 38 years a practitioner in Hamilton county, 28 of those years in Aurora, has located at Ft. Collins, Colo., to do eye, ear, nose and throat work.

Dr. B. F. Williams, Lincoln, has gone to London where he has received a clerkship in the National hospital, Queen's Square. He will be gone about three months.

Dr. H. L. Kindred, Meadow Grove, was the victim of an auto accident near West Point early in September. Fortunately the car was more seriously wrecked than the doctor.

Dr. Victor E. Levine, Omaha, spent the summer at St. Mary's Orphanage, Newark, N. J., doing nutritional work. Late in August he attended the International Congress of Physiology at Harvard Medical School, Boston.

Dr. A. F. Jonas, Omaha, long professor of surgery of the Nebraska University College of Medicine, has been retired at his own request and has been made professor emeritus. Dr. B. B. Davis succeeds him as head of the department of surgery.

NECROLOGY

Edward S. Dungan, Rochester, Pa.; Hahnemann Medical College of Philadelphia, 1900; nationally known surgeon; native of Nebraska and for fifteen years in practice at Grand Island; at the time of his death surgeon for the Pennsylvania railroad in a suburb of Pittsburg; died following an operation, September 15, 1929, aged about fifty-one years.

James M. Tische, Wood Lake, Nebr.; Kentucky School of Medicine, 1898; able practitioner at Wood Lake for twenty-two years; member Nebraska State Medical Association; died September 30, 1929, of organic heart disease, aged fifty-two years.

George E. Morris, Calexico, Calif.; Rush Medical College, 1925; recently in practice at Oshkosh and Scottsbluff, Nebr., leaving the latter place to locate at Calexico, but a few weeks ago; son of Dr. G. H. Morris, Oshkosh; died September 30, 1929, aged about thirty years.

BOOKS RECEIVED

THE TREATMENT OF FRACTURES, by Lorenz Bohler, M. D., cloth, 8 mo., 185 pages with 234 illustrations. Price $5.00. Wilhelm Maudrich, Vienna, 1929.

STERILIZATION FOR HUMAN BETTERMENT, by E. S. Gosney, B. S., LL. B., and Paul Popenoe, D. SC., cloth, 8 mo., 202 pages. Price $2.00. The MacMillan Co., New York, 1929.

THE CHALLENGE OF CHRONIC DISEASES, by Ernst P. Boas, M. D., attending physician, Montefiore Hospital for Chronic Diseases, and Nicholas Michelson, M. D., Adjunct Physician, Montefiore Hospital for Chronic Diseases, cloth, 8 mo., 197 pages. Price $2.50. The MacMillan Co.

EXTENSIVE RESECTION OF SMALL INTESTINE

In a case of gangrene of the small intestine caused by an embolus of the superior mesenteric artery, F. N. C. Jerauld, Niagara Falls, N. Y. (*Journal A. M. A.*, June 1, 1929), resected 19 feet of small bowel. A rapid entero-enterostomy was done, the small intestine being anastomosed to the cecum with a fairly large opening and with two rows of sutures. Convalescence was uneventful. One year later the patient was seen by William W. Washburn, San Francisco. Symptoms of intestinal obstruction led to a second operation. Close to the cecum were found a few old adhesions and one thick band which encircled the small bowel, about 4 cm. from its termination in the cecum. The adhesions were freed, relieving the obstruction. Since then the patient has been entirely well.

Taking advantage of the doctrine that doctors should stick "vun py each" a firm of attorneys in this state in a brief filed in the Supreme Court in a malpractice suit against a physician, contend that no member of the Nebraska State Medical Association will testify against another member in a malpractice case. Sad, very sad!

A credit rating bureau, separate from the county medical society, has been formed by the profession of Dawson county. The chief feature consists of reporting through a central agency the delinquents of the county who shop medical services from one to another, paying neither one. The method is said to give good results in a community that has many transient laborers in beet fields and hay fields.

A new organization known as the Iodine Educational Bureau has opened offices at 64 Water Street, New York City. Mr. J. J. Nichols is director of the bureau, which is supported by the Iodine Producers Association of Chile, South America. The bureau will collect and disseminate dependable information about iodine and iodine compounds. A large amount of research work will be undertaken, a fellowship already being established at Mellon Institute and several other fellowships will shortly be established at other institutions to follow up special lines of research investigation. The bureau will be ready to co-operate at all times with others doing research work on the application of iodine in agriculture, industry, animal husbandry and in the professions of medicine, dentistry, pharmacy and veterinary medicine.

SYMPOSIUM ON UROLOGY

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RIGHT-SIDED ABDOMINAL PAIN IN ITS RELATION TO UROLOGY*

J. M. WILLIS, M. D., F. A. C. S.,
McCook, Nebr.

In this discussion of this subject it is assumed that the discussion is from the viewpoint of the general diagnostician and not that of the urologist.

Perhaps the principal point in this consideration is the notorious fact that many lesions of the urologic tract simulate lesions of the gastro-intestinal tract in symtomatology.

The classical picture of pain beginning in the loin and radiating to the lower abdomen and to the genitalia or thigh, is undoubtedly the most typical picture of renal pain. It is not appreciated, however, how often this typical picture is absent; much less is it appreciated that pain arising from disease of the kidney and ureter is purely abnominal in type, with no pain in the back whatever.

When abnominal pain is the most evident symptom of renal or ureteral disease, it may be extremely misleading, for, as will be shown, the localization of the pain is oftentimes in the region of McBurney's point, or in the upper abdomen beneath the costal border. On the one hand, it may be confused with the pain of appendicitis, and on the other, with gall-bladder disease or gastric disturbances.

The renal lesions that may be expected to cause pain may be classified as follows: stone in the kidney or ureter; renal tuberculosis, pyelonephritis; hydronephrosis; tumor of the kidney; nephroptosis; pyonephritis; polycystic kidney; chronic nephritis; chronic malformations of the kidney; stricture of the ureter; cystitis and perhaps rare conditions.

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*Read before annual meeting Nebraska State Medical Association, Omaha, May 15, 1929.

Cecil in reporting sixty-seven cases of abnominal pain in diseases of the kidney and ureter (*Journal A. M. A.* Nov. 6, 1920) found the urine normal in seven cases (over 10%). Blood was found in the urine in fifty-six cases, pus in fifty-four cases, albumin in thirty-two cases, and the urine was found to be infected in fourteen cases. In his cases the confusing nature of pain in cases of stone in the kidney and ureter is well shown by the fact that thirteen of the sixty-seven cases studied, various surgical procedures had been undertaken for relief of pain in which symptoms were in no way changed and in which it was demonstrated that the pain was of renal origin. In the thirteen cases in which operation was performed the procedures had consisted of nine appendectomies, one operation on the left epidymis, two abdominal explorations, one gallbladder drainage, and one removal of the right ovary.

It is needless to state that individuals with pronounced urinary symptoms such as frequency, dysuria, hematuria or pyuria will demand a careful investigation of the urinary organs. On the other hand, many patients in whom lesions of the urinary tract exist have no typical symptoms referable to the function of these organs. Not only are symptoms suggesting urinary disease absent but in this class of cases the urine is frequently normal both chemicallly and microscopically.

That this fact is not properly appreciated by the profession at large is evidenced by the continued practice of exploratory laparatomies with resultant appendectomy, salpingectomy, uterine fixation, etc., without effecting relief of the pain which originally brought the patient to the doctor.

In spite of repeated warning, on the part of the urologist, the abdomen is frequently opened with negative findings without resorting to the urologic examination which would have shown the obscure type of pain to be caused by an obstructive condition in the renal pelvis of ureter.

O'Connor, *Medical Herald,* Nov. 1925, selected one hundred hospital cases encountered in the past five years at the Washington Boulevard hospital, Chicago, in the following report.

All of these individuals were referred for urological study because the chronicity of the complaint or the obscurity of the trouble seemed to demand a most thorough investigation. The urological study, therefore, was only a procedure in the routine method of diagnosis.

Symptoms: All of these patients had some type of abdominal pain or discomfort.

Location: Forty had right upper abdominal pain without radiation into the lumbar region or groin.

Eighteen had pain or discomfort in the right upper abdomen associated with intermittent or constant pain in the right groin or pelvic region.

Ten complained of some discomfort in the right flank, but laid more emphasis upon the abdominal localization.

Eight had pain solely in the right lower abdomen without reference to the upper quadrant or flank. Three of these eight had occasional radiation of the pain into the right groin.

Sixteen had pain constantly in the left upper or mid-abdominal region with intermittent radiation to the left lower abdomen or pelvic region.

In none was there any association of pain with the act or time of urination.

Palpable Masses: In twenty-two instances a mass suggestive of the right kidney was palpable. Three of these masses were larger than a normal right kidney and in fifteen the range of mobility was from the sternal border above to below the right iliac crest.

Urinalysis: Eighty of the one hundred cases were recorded as having a normal urinalysis on one or repeated examinations. Ten had record of from one to three pus cells per high power field. Six had nucleo-albumin present and four had numerous hyaline casts and epithelial cells.

Previous Operations: Seventy-seven of the patients had been operated upon before coming under the present hospital observation and six had been recently operated upon in our own hospital. In no instance had the operation relieved the original pain of which the patient complained.

Fifty-five had had one abdominal operation only; twelve had two abdominal operations; eight had four, and two had five major operations.

CHARACTERS OF OPERATIONS

	Cases.
Appendectomy alone	43
Appendectomy and salpingectomy	12
Appendectomy, salpingectomy and uterine suspension	5
Cholecystotomy	7
Salpingectomy and uterine suspension	6
Repair of inguinal hernia	5

Dilation and curettage of uterus with various plastic operations	14
Exploratory laparotomy with "release of adhesions"	7
Hydronephrosis	28
Hydronephrosis, ureteral stricture	12
Hydronephrosis, ureteral stricture and renal calculi	5
Ptosis of the kidney with angulation of the ureter	22
Ureteral stricture with early hydronephrosis	8
Ureteral stricture without evidence of long standing back pressure	14
Ureteral calculus	10
Utero-vesical cyst with dilation of the ureter	1

The urologist, by means of the special diagnostic measures at his command, and in the light of a now very considerable experience, can determine the status of kidneys or ureters with gratifying accuracy, as shown by the fact that in a recent year there was an error of only 4% in the pre-operative diagnoses in the Urological Department at the Massachusetts General Hospital. Closer co-operation between the general surgeon and the urologist is therefore highly desirable.

Golstein and McBee (*W. Virginia M. J.* Aug. 1925) have stated that 20% of abdominal operations performed by various surgeons have resulted in mistaken diagnoses, and it is reported by Blesh (*Southern Med.* Feb., 1925) that 40% of 5000 appendectomies were unrelieved of their symptoms by operation. The experience of the writer has been that of other observers, namely, that in from 15% to 20% of lesions of the kidney and ureter, chiefly due to calculi, previous operation has been performed, without relief, for other abdominal conditions. In many of these little or no preoperative investigation of the urinary tract was made. As Goldstein and McBee say, "In obscure abdominal conditions when it has been demonstrated that the genito-urinary tract is free from pathology then, and not until then, is one justified in making an attack upon the intestinal tract."

In the author's opinion the character and location of pain are depended upon too much in making a diagnosis. The abdominal organs are supplied with sympathetic and autonomic nerves which carry no fibers of pain sensation. However, stimuli from these organs travel to certain segments of the spinal cord, where they are relayed to the brain, and interpreted as pain sensations from areas of distribution of cerebrospinal nerves of the same cord segments. The tenth, eleventh and twelfth dorsal and first lumbar segments receive stimuli from a majority of the organs, and the pain sensations are, of course, referred to the corresponding cerebrospinal nerve areas. Occasionally visceral stimuli reaching the cord at the normal segment are transported up or down the cord to a distant segment before being relayed to the brain; this naturally, may complicate the clinical picture. Another source of confusion lies in the close relationship between some abdominal viscera and the trunks of some cerebrospinal nerves. It is easy to see that inflammatory lesions in and about those organs can extend to the nearby nerve trunks, irritating them, and causing sensations of pain referred to the areas of distribution of the nerves. So, then, we must conclude with Hinman and other authorities that pain of itself can never be considered absolutely pathognomonic of any one lesion.

To make a diagnosis we must consider pain in association with other findings—temperature, pulse, respiration, tenderness, muscle spasm, rigidity, urinalysis, blood examinations, and, in certain cases, special examinations such as roentgenography, fluroscopy, and urologic examinations.

But why are there so many inaccurate and incomplete diagnoses, leading to ineffectual operations and expensive periods of futile medical treatment? In the first place we fail to develop the art of medicine to the fullest degree; the elicitation of the details regarding the character and radiation of pain, and the details of the present and past history; the systematic consideration of symptoms referable to the various organs; the careful physical examination including rectal and vaginal examination; the sorting of facts and diagnosis by elimination. We place too much dependence on pain as a symptom; pain is never absolutely pathognomic of any disease. In the second place we fail to make the most of the science of medicine, the methods and instruments of precision, examinations of the blood and urine, roentgenography, cystoscopy, urography. The value of urologic findings is great, even as negative evidence.

The errors of diagnosis by complete urologic methods are few, while the errors of diagnosis in acute abdominal disease as a whole are numerous, with correspondingly high mortality and morbidity. We, or the family, may hesitate to have special examinations because of the added expense, but we must recognize that failure to make a complete and accurate diagnosis may sentence the patient to larger expenses later for further hospitalization and treatment, to say nothing of the possibility of heavy funeral expense.

In cities and in large hospitals the aid of the roentegenologist and urologist should be freely asked and promptly given. As a rule, no patient should undergo an exploratory laparotomy until at least an attempt has been made to rule out lesions of the upper urinary tract.

On the other hand, in the presence of abdominal emergencies we must remember that prolonged delay may sometimes be more dangerous than operation without an absolutely accurate diagnosis. Clinical judgment may demand an exploration rather than a delay to obtain a distant urologist, but in these days it must be possible in most places to obtain at least a simple roentgenogram of the entire urinary tract on slight indication and without delay.

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THE SIGNIFICANCE OF BLOOD IN THE URINE*

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The presence of blood in the urine occurs very frequently. It occurs more frequently in men than in women. There may be enough blood present so that it shows macroscopically or it may be only detectable microscopically. Too often the the appearance of blood in the urine is minimized both by the physician and patient. This is particularly true if the bleeding is intermittent and painless. Women are more apt to give little attention to blood in the urine, since they see blood mixed with the urine during menstrual periods. Hematuria, except in the case of severe injuries, should not be taken as a symptom to be treated immediately, but should be looked upon as a warning, calling for investigation to determine the cause. The macroscopical appearance of blood in the urine even if it is painless, attracts the patient's attention and sends him to his physician with the questions: Where is the blood coming from? What is causing it? These questions are important because no rational method of treatment can be used until the source of the bleeding and the etiological factors are definitely determined.

Diagnosis early in the course of the disease causing hematuria gives opportunity to do much that often is of no avail at a later date, because of the advance in the disease before diagnosis was made.

The clinical history, the general physical examination, the special examination of the genito-urinary tract and the other findings in the urine must all be used in determining the source of the bleeding and the disease causing it. Sources of hematuria may be divided into general or systemic causes, and local pathological changes of the genito-urinary tract. About two-thirds of the cases fall in the latter group.

Under the heading of systemic causes we find various blood conditions that may account for the hematuria such as purpura hemorrhagica, scurvy, leukemia, erythemia and hemophilia.

In hemophilia one must not overlook the fact that other renal lesions may exist at the same time, and be the cause of the bleeding. However, the history of rather marked ecchymoses, following slight injuries should make one determine the coagulation time of the blood. Hematuria has been reported in Hodgkin's disease.

Hematuria, either macroscopic or microscopic, may precede, accompany or follow an attack of acute or recurrent appendicitis. A few of these cases may be due to the proximity of the appendix to the ureter, but most of them are due to an acute or subacute nephritis from a hematogenous infection of one or both kidneys. It is possible that an appendicitis and a lesion of the urinary tract may exist at the same time. The most important urinary tract conditions to be excluded in such cases are stricture of the ureter and the passage of a stone down the ureter.

Hematuria is also seen as a complication of certain fevers, smallpox, typhoid and malaria and from poisoning by drugs, such as cantharides or turpentine. Large doses of urotropin have frequently been known to cause hematuria.

Sources of hemorrhage due to pathological changes in the genito-urinary tract may be found in the urethra where the cause of bleeding may be trauma, urethritis, new growths or calculus.

In the prostate gland the cause of bleeding may be trauma, hypertrophy, tumors or inflammation.

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In the bladder the bleeding may be due to trauma, tumors, cystitis, tuberculosis, varices, stone hyperaemic congestion or parasitic disease.

In the ureter, trauma, stone, tuberculosis, tumors, varices, stricture and inflammation may be the cause of bleeding. The lesions of the kidney that may be the cause of blood in the urine cover practically all varieties of renal pathology. Trauma, nephritis, calculus, embolism and infarct, thrombosis of the renal vessels, varices, tuberculosis, neoplasms, hyronephrosis, pyelitis, pyonephrosis, movable kidney, polycystic kidney and the so-called "essential hematurias".

The term "essential hematuria" is not only unsatisfactory, but often used to account for undiagnosed hematuria that might have been diagnosed with a more searching examination. There are, however, a few cases in which the most diligent search with every known method of diagnosis fails to reveal a pathological lesion that accounts for the bleeding from the kidney. The bleeding in these cases usually arises from small foci and may produce no other symptoms unless the loss of blood be sufficient to cause a secondary anemia, or a blocking of the ureter with resultant pain. Such cases may call for operative interference, even though a definite diagnosis of the pathological lesion causing the bleeding has not been made.

When one looks at such a long list as the possible causes of blood in the urine, it might appear that a definite diagnosis of the lesion responsible would be a hopeless task. Such is not true, however, in the vast majority of cases. The general history as a rule, if carefully taken, will serve to limit the possible sources of bleeding to a comparatively small number.

All hematurias dependent on conditions of the blood such as hemophilia and purpura or associated with various fevers and those following the ingestion of various drugs are differentiated readily.

Blood may be the only sediment in the urine, or it may be associated with various other sediments such as gravel, tissue fragments, pus and bacteria.

If the urine is passed in three clean conical glasses the appearance of the urine in each glass will give an idea of the source of the bleeding. If the bleeding from the urethra is ahead of the external sphincter, the blood will flow from the meatus independent of urination, the first glass of urine will contain blood while the others will be nearly clear. If the source of urethral bleeding is behind the external sphincter there will be no bleeding between urinations. The first glass will be bloody, the second and third glass will be clear unless the bleeding is of so great an amount that it fills the posterior urethra and is forced back into the bladder between urinations, when the other glasses will show blood stains. If the bleeding is from the prostate or from granulations, or new growths in the posterior urethra the first glass only will be bloody. If the bleeding is so slight that it does not flow back into the bladder, the third glass may show more blood than the second due to the compression exerted at the end of urination. If the three glasses are about the same color, the blood being intimately mixed with the urine, the source of bleeding is above the vesical sphincter from bladder, ureter or kidneys.

Terminal hematuria in which a few drops of almost pure blood are expelled with the last drop of urine, usually means a bladder lesion, but may be from the kidney, the blood having settled to the base of the bladder is voided with the last part of the urine. When all three glasses show blood, the presence of cylindrical or worm like clots is very important as such clots are molded in the ureter and indicates the source of the bleeding to be in the ureters or kidneys.

The presence of blood casts indicates the source of bleeding to be in the kidney tubules.

If, on standing, the blood separates readily from the urine, the source of the bleeding is likely to be in the prostate or bladder as the shorter the time the blood has been in the urine, the more rapidly it separates on standing.

The physical properties of the urine are often changed by the presence of blood. The reaction is usually made alkaline. The color varies from bright red to a dark brown. The odor and specific gravity are usually not changed.

Other symptoms associated with hematuria often indicate the source of the bleeding. If the individual has a urethritis with a frequency of urination and hematuria, the symptoms of the infection point at once to the source of the bleeding.

Hematuria associated with pain localized in a definite organ points to that organ as the source of the bleeding. The more important diseases of the kidney causing hematuria associated with other symptoms are renal calculus, tuberculosis, trauma and neoplasm.

Hematuria may occur before, during or after an attack of renal colic due to calculus. It rarely shows previous to the attack of colic and may persist for some time after the colic. It is rarely of large amount, usually microscopical and due to injury of the mucosa by a stone.

X-ray examination serves to complete the diagnosis in 90% of cases.

In tuberculosis of the kidney, marked hematuria occurs in only about 25% of cases and is apt to come on suddenly. It is seen more frequently in the earlier stages of the disease and usually indicates an erosion or ulceration of the pelvis of the kidney. Many cases of renal tuberculosis will show a few blood cells mixed with the pus cells particularly if there are tuberculous ulcers in the bladder. The other symptoms, especially polyuria, diurnal and nocturnal dysuria taken with the bladder picture and finding of the tubercle bacilli, will serve to differentiate it.

Traumatic injury of the kidney or ureter from a blow, a fall or crushing injury will be manifested by the sudden appearance of blood in the urine. The bleeding is apt to be profuse distending the bladder with blood and sometimes is so profuse as to prevent cystoscopy. When cystoscopy is possible one may determine whether the blood is coming from the bladder or either kidney. Catheterizing of ureters should not be attempted in those cases. If a ureter is completely severed there will be no hematuria from that side. Hematuria from injury should be treated expectantly, by rest in bed and administration of hemostatics. Operation is indicated if the hemorrhage is progressive or recurring or if infection has started. Nephrotomy and packing if the kidney can be saved, but usually such cases call for nephrectomy. If both kidneys are severely injured, operation of any sort is contraindicated.

A sudden unexplained profuse hematuria is apt to be from renal neoplasm. In this disease the bleeding is usually intermittent and without clots. Between excretions of urine blood may ooze through and around a ureteral catheter. Painless hematuria of kidney origin is most frequently caused by acute and chronic nephritis, renal varix and benign papilloma of the kidney pelvis. Rarely painless hematuria may come from neoplasm and tuberculosis of the kidney.

In acute nephritis the quantity of blood varies from a microscopic quantity to an amount large enough to color the urine a bright red. This type of hematuria is associated with the usual symptoms of acute nephritis, diminishtd amount of urine of high specific gravity, a moderate amount of albumen, hyaline casts, degenerating renal epithelium and red blood cells.

There are two forms of chronic nephritis in which hematuria may occur. First chronic parenchymatous nephritis is frequently accompanied by intermittent attacks of severe hematuria—urine diminished in amount of low specific gravity, and there is a large amount of albumen, many hyaline and granular casts, many red blood cells and leucocytes and frequently blood casts and epithetical cells. The second type of chronic nephritis in which we find alarming hemorrhages is the contracted and arterio-sclerotic kidney. In this form the urine is increased in quantity, is of low specific gravity and contains a little albumen. The hemorrhage may take place in any part of the kidney.

In renal varix the patient apparently in good health suddenly notices blood in the urine. There is nothing to account for its presence. There has been no excessive exercise, no history of renal colic or injury, no infection, no abnormal elements in the urine except blood which is at first small in amount, then either increasing or decreasing, and at times absent altogether. The hemorrhage may last a few days, recurring again frequently or not for months or it may be continuous from its first onset. Definite diagnosis often may be made only by exploratory operation though by elimination of other causes of painless hematuria we may make a tentative diagnosis of reno varix.

In benign papilloma of the kidney pelvis a painless hematuria may take place suddenly without warning, independent of exercise and cease just as suddenly, leaving the urine perfectly clear. This condition may be suspected by exclusion of other causes of hematuria of this type and pyelogram, but cannot be positively diagnosed except by operation.

SPECIAL METHODS OF EXAMINATION

I wish to briefly outline the special methods of examination employed to supplement the history, subjective symptoms, and urinary findings in determining the source and cause of hematuria.

Palpation of the prostate gives us information as to whether the prostate is inflamed or hypertrophied.

Catheterization of the bladder is of considerable value. If, after introducing a catheter and thoroughly irrigating the bladder, the urine is clear, the bleeding is likely coming from the urethra or prostate. Profuse bleeding immediately following the washing indicates the bladder as the sources of the bleeding. If the proportion of the blood in the urine is not changed by the washing of the bladder, then the source of the bleeding is likely a kidney lesion.

The urethroscope is an aid often overlooked and is of particular value in determining whether the source of bleeding is in the urethra from a stricture, granulation, erosion or new growth.

Passing of a sound or stone searcher may detect the presence of a stone in the bladder.

Radiography: A flat plate of the kidney, ureter and bladder should be taken of every case of hematuria before cystoscopic examination. This may show at once the presence of a foreign body or calculus.

Cystoscopic examination usually tells us very readily whether the source of bleeding is in the bladder or kidney. If the hematuria is profuse and of bladder origin it is often difficult to make a satisfactory cystoscopic examination unless the patient is put to bed for several days and given small amounts of fluids, hemostatic and sedative drugs. In such cases it is well to irrigate with only a small amount of fluid and attempt to make an examination after one or two washings as further washings may start the bleeding again. A systematic examination of the bladder will show at once the presence of foreign bodies, eroded tumors or bleeding ulcerations. It is often not easy to determine whether bleeding from an ulcerated area near a ureter opening is not coming from the ureter. Blood may settle down over a ureter opening and not show readily except at the time the urine spurts from the ureter and mixes with it. Repeated washings in such cases will clear the field if the bleeding is entirely from the ureter and kidney. The observation of bloody urine spurting from the ureteral orifice is often of more value than the passage of ureteral catheters as the catheters may traumatise the membrane of the ureter or kidney pelvis sufficiently on pyelograms and ureterograms as a supplement to cause bleeding.

The last few years have brought out the work to ureteral catheterization. By the introduction of an opaque media, preferably sodium iodide of 12½% to 15% strength, in sufficient quantity to dilate the kidney pelvis, we are able to outline the shape of the kidney pelvis, calyces and ureter. Deformities of the kidney pelvis and calyces enable us to diagnose the presence of kidney tumors often when there is not yet enough enlargement to make the kidney palpable. The interpretation of pyelograms so as to distinguish the normal from the abnormal is only gained by observation of many cases since there is a wide variation in pyelograms of normal kidneys. Blood clots in the kidney pelvis may be a source of error by causing a filling defect similar to that caused by a tumor of the kidney pelvis.

TO SUMMARIZE

About one-third of the cases of hematuria are due to systemic diseases. The other two-thirds are about equally divided between the upper and lower genito-urinary tract.

The most common cause of renal hemorrhage is acute nephritis. Stone or tuberculosis comes next, the frequency of these two conditions varying greatly according to the age of the patient. Between the ages of fifteen and twenty-five, renal hemorrhage is more often due to tuberculosis than stone. From twenty-five to forty-five stone is more frequently the cause of renal bleeding than tuberculosis. Neoplasm is next in order as the cause of renal hemorrhage.

The most severe bleedings are met within cases of bladder tumor or kidney injury.

Hypertrophy of the prostate is a common cause of hematuria.

Hematuria is a symptom calling for immediate investigation to determine its cause before rational method of treatment can be adopted. The etiological factor in the vast majority of cases is easily recognized, but many cases will require every method of examination at our disposal to determine the cause.

THE DIAGNOSIS OF URINARY OBSTRUCTIONS*

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The differential diagnosis of urinary obstructive lesions should be of general interest because of the precision with which such lesions may be studied, because of the high percentage of gratifying results obtainable through proper treatment, and because of the certain increase in mortality that surely follows their neglect.

OBSTRUCTIONS OF THE UPPER TRACT

A comprehensive discussion should include reference to obstructions affecting both sides of the supravesical tract. those affecting only one side of the supravesical tract, and those affecting the lower or infravesical tract.

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Bilateral obstructive lesions above the bladder present no very complex problems in diagnosis. They are very uncommon, bilateral congenital stenosis of the ureter and congenital cystic kidney being the only notable examples. The congenital ureter block will early result in death, but patients with cystic kidneys may live remarkably long and useful lives. The symptoms of the latter condition are entirely systemic, and in most cases are indistinguishable by any clinical sign or laboratory procedure from those of chronic interstitial nephritis. In any individual not exceedingly corpulent, at least one of the cystic kidneys will be palpable, and the diagnosis may usually be made on the evidence gained by palpation alone. The phenolsulphonephthalein output will be very greatly reduced, and pyelography, which should be attempted on only one side at one sitting, will show a typically flattened and elongated kidney pelvis. Although the pathology is always bilateral, the degree of enlargement, and of functional impairment is seldom the same. Again there is seldom enough excretory ability on either side to allow safe removal of the opposite kidney. I have included this brief description of the diagnostic signs of the congenital cystic kidney because with their tendency to cause hematuria, tumor mass and pain, there can readily arise a tendency to regard the condition as surgical to the extent of advising nephrectomy. Incision and multiple puncture of cysts may become necessary to relieve pain and hemorrhage, but the general treatment is always medical.

Theoretically an obstruction occurring in a remaining kidney, after a previous total disability of the opposite side, would constitute a bilateral obstruction. The clinical picture of anuria in such a case would have a sudden and dramatic onset, and would be preceded by a significant colic in the side occupied by the more recently functioning kidney.

In contrast to the nephritic picture of bilateral obstructions, unilateral obstructions of the upper tract present no symptoms due to renal functional disturbance for the reason that actual hypertrophy of the opposite sound kidney, if one is present, compensates for the loss of renal function in the obstructed side. The complaint will be either of pain, tumor mass, hematuria, or the group of symptoms incident to a secondary cystitis.

Pain is the most constant sign of unilateral obstruction, but in cases in which the obstructing influence has been of gradual onset, pain may be absent. The recurrent colicky pain incident to upper urinary calculus needs no description. Hydronephroses following less acute obstructive processes than blockage of the ureter by a calculus may give rise to constant dull pain of achy type.

Tumor is a valuable sign when a mass is palpable, but palpation may be highly unsatisfactory in a stout individual. A sparely built patient may be able to note a periodic variation in the size of a tumor mass in the side of the abdomen, and it may also be discovered that such variation in size bears a direct relation to periods of increased urinary output. With such signs, one could hardly fail to suspect an hydronephrosis.

Hematuria, rarely, may occur in obstructions not due to calculi. When calculi are present, hematuria is almost invariably a sign, although it may be necessary to examine a centrifuged specimen to know that blood is present.

Signs of Cystitis, such as frequency, urgency, burning, nycturia and feeling of weight and distress in the suprapubic region constitute a complaint which is too often neglected. It should always be remembered that urinary obstruction, urinary stasis, and urinary infection are almost synonomous terms. An infected hydronephrosis will not clear up until the obstruction causing urinary stagnation is removed, and such a source of infection may keep a bladder inoculated in spite of all the urinary antiseptics and bladder irrigations that can possibly be used. A diagnosis of "cystitis" is very rarely a complete diagnosis. It is true enough that many urinary infections clear up very graciously under treatment with some favorite urinary antiseptic, or with just plenty of plain water, but when one fails to clear up after a reasonable period of such expectant treatment, the cause for the cystitis should be sought, or finally, a proper diagnosis should be made.

A short paper cannot describe in detail the finer diagnostic points that may decide whether an upper urinary obstruction is due to calculus, infection and ureteral stricture, new growth, or pressure from a tumor or an anomalous blood vessel lying outside the urinary channel. These extremities of diagnosis can readily be arrived at by the use of the cystoscope, the opaque ureteral catheter, and the x-ray, if the fact is remembered that an urinary obstruction may exist as the cause of abdominal pain. An infected right hydronephrosis with its tenderness and ability to cause various digestive disturbances has often been discovered long after a gallbladder or a chronic appendix has been removed without relief.

OBSTRUCTIONS OF THE LOWER TRACT

When an elderly man presents himself complaining of frequent urination, nycturia, hesitancy, straining and dribbling, the impression is gained immediately that he has a benign hypertrophy of the prostate. It is altogether natural that this diagnosis comes first to mind because it is true that prostatic hypertrophy is one of the most common and best understood forms of lower urinary obstruction occurring in men past middle age. But it is equally true that there are other conditions that may produce symptoms indistinguishable from those that follow benign hypertrophy, and it is important that we remind ourselves of these other causes occasionally if we are to continue to lower the mortality incident to the care of these obstructions and to secure the most gratifying post-operative results.

BENIGN PROSTATIC HYPERTROPHY

Since benign hypertrophy is one of the most common types of obstruction, I shall use that condition as a point of departure and briefly describe its diagnosis. Given a patient of declining years and the suggestive symptoms above mentioned, we may begin by asking him to void if he is not having complete urinary retention. Passage of a soft rubber catheter may then discover a residual urine, and at the same time rule out an urethral stricture—another very common obstructive lesion by no means limited to younger men. After determining the presence of residual urine, it remains only to do a rectal examination, and if a smooth elastic unindurated enlargement is found, the diagnosis of obstruction due to benign prostatic hypertrophy can generally be made. Should one fail to palpate a typical enlargement, the problem is not so quickly solved, and in this connection it is important to remember that an obstructive hypertrophy may exist as an enlargement within the bladder where it can be recognized only by the use of the cystoscope. It should be a rule, whenever possible, to examine cystoscopically, before operation, every case diagnosed as prostatic hypertrophy. This would serve the purpose of knowing whether or not there are present any of such complicating features as diverticula, bladder tumors, or bladder calculi. Symptoms of obstruction may persist, and certainly those of infection will remain even after prostatectomy has been done if a large diverticulum has not been discovered and removed. Likewise surgery will fail to please if an inoperable bladder tumor is discovered soon after a prostatectomy. Vesical calculi are not to be regarded as a cause of urinary obstruction, but they must be mentioned here as an important and very commonly seen complication, and cystoscopy is the most dependable means for determining their presence. The metal sound is useful if contact is made with a sizable calculus, and the surgeon notices the crepitation. X-ray occasionally fails, because some types of calculi do not cast sufficiently dense shadows to make possible their differentiation from fecal masses in the lower bowel.

In the process of examination thus carried forward one may have arrived with certainty at a diagnosis of benign hypertrophy, and some important complications may have been discovered. The degree of certainty of this diagnosis will depend on how well one has kept in mind and ruled out three other conditions that are commonly causes of error in like cases. These conditions are carcinoma of the prostate, lesions of the central nervous system affecting the bladder, and fibrous contracture of the vesical orifice.

CARCINOMA OF THE PROSTATE

Carcinoma is of foremost importance among these because of the remarkable frequency of its occurrence, the larger urological clinics reporting that an average of one in every five prostatic obstructions is cancerous. The diagnosis must be based chiefly on rectal palpation. Often there will be no difficulty in noting the stony hardness of the prostatic capsule, for the pathology begins in that portion of the gland capsule lying nearest the rectum and immediately under the examining finger. In the presence of chronic inflammatory changes, or if the primary lesion is very small, the diagnosis may be no more definite than an expression of opinion, the value of such opinion depending, of course, on the experience of the examiner. Benign elements of growth may be present simultaneously, and to such a degree as to make surgical treatment imperative in spite of the possibility of malignant changes and the consequent poor post-operative result that must be expected. Hematuria is not a differential point in the recognition of prostatic carcinoma, because gross bleeding from the bladder neck is sometimes the initial symptom in the benign cases, and often it constitutes the emergency which forces a procrastinator to ask for surgical attention.

Although treatment is not a question for discussion, we must mention it in connection with prostatic carcinoma because a proper appreciation of the futility of treatment should act as a constant stimulus to make the diagnosis as early and as often as possible. There is a ray of hope in the knowlege that sufficiently early diagnosis may allow a cure through the radical perineal operation of Dr. Young, in which the entire prostatic capsule, bladder neck, and a portion of the trigone is removed. Needless to say, a sufficiently early diagnosis is generally arrived at only by chance. Precious months may slip by before the patient presents himself, because for a considerable time there is no complaint. When he does come in, a rectal examination may be carelessly postponed, or else the hard little nodule may be overlooked. Carcinoma should be thought of in every man past middle age who complains of urinary difficulty, and a rectal examination should be made with the utmost care with that pathology in mind. Should cystoscopy reveal a co-existing benign enlargement, it may be advisable to enucleate only the obstructing portion, and so relieve the acute symptoms, because carcinoma of the prostate is relatively benign, and the patient may be enabled by such a procedure to enjoy several years of comparative usefulness without being aware of the exact nature of his trouble.

LESIONS OF THE CENTRAL NERVOUS SYSTEM

Tabes is not the only neurological cause for difficulty in emptying the bladder. Myelitis and scleroses not luetic in type may produce changes in the cord at any age. A large residual urine, causing little pain or discomfort, rather decreased than increased frequency, no pain, but a conscious increase in the effort required for voiding, and perhaps dribbling at night should make one think of a neurogenic disorder. Usually a neurological examination will reveal typical findings. In tabes it is the rule at cystoscopy to find the internal vesical sphincter relaxed, so that with the instrument ordinarily used for examining the bladder, enough illumination comes through the open internal sphincter to permit a view of the prostatic urethra and the verumontanum. In stressing the importance of accurate diagnosis, it may be added that attempted prostatectomy in these cases can do little more than increase an already existing defficiency in urinary control.

FIBROUS CONTRACTURES OF THE VESICAL ORIFICE

Narrowing of the vesical orifice and interference with the physiological activity of the internal sphincter by the presence of dense fibrous tissue at this point is not an uncommon condition, and the symptoms resemble those following benign hypertrophy in almost every detail. Median prostatic bar may be included under this classification. Obstructions of the bar type are commonly seen in men of prostatic age and are recognizable through the cystoscope as a fullness or convexity in the floor of the orifice and trigone, causing depression of the ocular end and elevation of the beak of the instrument so that a view of the trigone and ureteral orifices is prevented, or else is obtained with more or less difficulty.

Fibrous contracture may occur at any age, and its diagnosis is arrived at by a process of exclusion. Rectal examination reveals no enlargement, and the cystoscope reveals no sign of intravesical lobes. There may be visible a prominent inter-ureteric ridge or a foreshortened trigone with a depression or pocket of considerable depth lying behind it. Usually there is palpable an undue thickness and firmness of tissue lying between the finger in the rectum and the shaft of the cystoscope in the bladder neck.

We have mentioned the most common sources of error in the diagnosis of the cause of lower urinary obstruction. They are, to repeat, carcinoma of the prostate, lesions of the central nervous system, and fibrous contractures or median bars. There are others less important, either because less frequently encountered, or because they are more easily recognized. Brief mention would include strictures of the urethra, easily found by exploring the channel with sounds; new growths of the bladder, obstructing its orifice and readily seen at cystoscopy; and prostatic cysts likewise typical when exposed to direct vision. Congenital valves of the prostatic urethra usually give trouble before prostatic age, and are so rare as to merit no discussion here. Paraurethral and prostatic abscesses compressing the lumen of the canal must be remembered as causes for obstruction and retention, but their recognition is not generally difficult. A bladder diverticulum will seldom be overlooked at cystoscopy, and may readily be demonstrated by a cystogram. Extravesical tumor, notably carcinoma of the rectum, will occasionally be found where a patient complains only of symptoms of obstruction to urination.

A vesical calculus may occur as a ball valve in the posterior urethra to prevent continuous and comfortable urinary flow. They may occur in men of any age, and should be regarded as the result rather than the cause of the urinary obstruction. Removal of such calculi seldom marks the end of the patient's urinary complaint unless other obstructive and infective influences are remedied. Residual urine, bladder hypertrophy, chronic infection, calculus formation, dilatation of the ureters, hydronephrosis, and loss of kidney function all are the result of lower urinary obstruction. The last mentioned and most vital factor, kidney function, begins to fail as soon as the urinary stasis is definitely established, and is the reason why we should urge early as well as accurate diagnosis. Unlike the unilateral upper tract obstruction, there can be established in these cases, no compensatory renal function. If diagnosis is early, periods of preparation for operation may be shortened, and more cases can be judged operable. If it is accurate, the proper treatment may be selected, a correct prognosis may be given, and more gratifying results may be expected when all that is possible in the way of treatment has been properly done.

SUMMARY

1. There are three outstanding conditions easily mistaken for benign prostatic hypertrophy; namely, carcinoma, lesions of the central nervous system, and fibrous contractures of the vesical orifice.

2. Carcinoma of the prostate is so common and so liable to be overlooked that it should be kept constantly in mind as a differential possibility.

3. In cases of definite benign prostatic hypertrophy, unsatisfactory post-operative results may often be avoided by using cystoscopy to determine the presence or absence of complicating features.

4. It is especially desirable in all lower urinary obstructions to diagnosis early as well as accurately so that treatment may be instituted before renal function becomes inadequate.

5. The more common obstructions of the upper urinary tract are unilateral, and compensatory kidney function protects the patient from serious systemic damage, whereas obstructions of the lower tract allow neither kidney to escape, and systemic damage begins from the start of the obstruction.

TUBERCULOSIS OF THE KIDNEY*

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I desire to discuss certain clinical and prognostic aspects of this disease from a review of thirty cases which have come under my care. Renal tuberculosis has been defined by O'Neill as those destructive lesions occurring in the kidney due to the introduction, retention and colonization of the tubercle bacillus of Koch.

It is probably not generally understood that 30 per cent of all surgical lesions of the kidney are due to renal tuberculosis.

Unfortunately, it is a disease of early adult life usually occurring between the ages of twenty and forty. In the series here quoted the incidence ranged from twenty to forty years, with the exception of one case—a woman sixty-five years of age. Let me quote this case here.

This patient, a woman sixty-five years of age, was admitted to my service at the Lincoln General Hospital with a palpable tumor in her left flank, a readily diagnosable tuberculosis of the left kidney involving the ureter and bladder. Twenty years previously she had a syndrome, undoubtedly tuberculosis, of the left kidney. It reached its height at the end of three years and, contrary to the usual course, the symptoms subsided and remained quiescent twenty years. Her syndrome then reappeared and she came to the hospital with this condition. Because of a lack of integrity on the part of the second kidney she was not operated, and died one year later from generalized tuberculosis.

This case is of interest from the standpoint of what renal tuberculosis will occasionally do. As previously stated, renal tuberculosis is a disease of early adult life, hence, it places this condition in the realm of high economic importance because of the fact that it strikes the individual at that period of life when his career is of greatest economic value to him. It is a disease of long duration, thus incapacitating the patient for a great length of time and either ending in complete physical destruction or is alleviated if properly heralded.

This brings to mind the question of diagnosing these conditions early. I do not believe there is a routine way of making an early diagnosis in these conditions, but there is a certain syndrome which should make us feel suspicious, we are dealing with early renal tuberculosis. What is it? When you find an individual in early adult life complaining of a progressive polyuria, persistent, with some dysuria, and a little pus or albumin in the urine, it should arouse the suspicion of the doctor that he might be dealing with a renal tuberculosis in its early phase, and every effort should be put forth to diagnose that situation. It is not easy, and calls for the utmost ingenuity on the part of urologists, and at that they are rarely successful.

Persistent search of such a urine for tubercle bacilli should not be neglected. Guinea pig inoculation should be indulged in and a differential function repeatedly observed for progressive deficiency in the suspected kidney. Not infrequently this in itself will lead us to feel there are progressive, destructive lesions going on.

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Recognizing the fact that tuberculosis of the kidney achieves its infection by way of the blood stream from some remote focus, it raises the question: Is renal tuberculosis in its primary phase a bilateral or unilateral involvement? If bilateral, there is little that can be done for the individual, even though a diagnosis of renal tuberculosis is made. Many good men feel it is primarily bilateral. They are met with the contention of many who feel it is not primarily bilateral, but a unilateral condition. Let either contention be true. We know a certain number of cases will present recoverable bacilli from both kidneys. I do not mean by that that both are necessarily involved. Braasch quotes 18 per cent, and Wildbolz of Switzerland quotes 12 per cent.

I will quote a case which I think establishes the contention that renal tuberculosis is not necessarily a primary bilateral lesion. In 1922 I saw a lady thirty-five years of age with an active pulmonary tuberculosis and a readily diagnosable caseocavernous tuberculosis of the left kidney. There were recoverable bacilli from her right kidney, although its function was not impaired. I removed the left kidney, and, under treatment for a period of time, her pulmonary tuberculosis became quiescent and she lost her tubercle bacilli from her right kidney. She went to California. A few years later I saw her with a recrudescence of pulmonary tuberculosis with again recoverable tubercle bacilli from her right kidney. I gave her an unfavorable prognosis. Two years later she returned the picture of health with a perfectly normal right kidney. It is my opinion in this case that there was a filtration of tubercle bacilli through the renal secretory apparatus which rose and fell coincident with her pulmonary tuberculosis.

Let me present my review of these thirty cases in brief. I have chosen to divide them into two groups. Group One contains five cases, and Group Two contains twenty-five cases. The cases in Group One represent those cases in which bacilli were recovered from both kidneys—two females and three males. In Group Two I was able to demonstrate tubercle bacilli from only one kidney. In Group One, one was not operated. Since this report was first given (December, 1928), this patient died (April, 1929) of generalized tuberculosis. She had a bilateral renal tuberculosis. She had an active pulmonary tuberculosis and tuberculosis mastoiditis. It was felt the risk of operation was out of proportion to the good which could be done. Four of Group One were subjected to nephrectomy. One died eight weeks post-operative from generalized tuberculosis. This case should not have been operated. Three cases of this group with bacilli in both kidneys are living at the end of seven, five and three years. It substantiates my contention that because tubercle bacilli are recovered from both kidneys, it does not necessarily mean all cases of that class are inoperable. Suffice to say the above cases were operable. All five cases had a coincident active pulmonary tuberculosis.

The case which died had an involvement of the other kidney and a general involvement. The age incidence ranged from twenty-seven to forty years. The mortality of the operated cases is 25 per cent. The mortality of the unoperated cases is now 100 per cent.

In Group Two, twenty-five cases with unilateral involvement, the age incidence is twenty to forty with the exception above quoted. Seven were not operated. Eighteen were subjected to nephrectomy. Of the seven not operated, four were not operated because of the patients' choice; two because it was deemed the risk was out of all proportion to the good which could be achieved because of other complications not of a tuberculous nature. One was not operated because of sudden death upon the cystoscopic table.

Of the seven unoperated cases, excluding the accidental death, two are dead. Two are progressively worse without treatment, and the status of two is unknown. The mortality in the unoperated cases, excluding the case which died on the cystoscopic table, is 33 1-3 per cent. There were eighteen cases subjected to nephrectomy with no immediate post-operative mortality. One patient died one year post-operative of pulmonary tuberculosis, a late mortality then of 5.5 per cent. The post-operative incidence ranges from seven years to two months. Twelve are well of all symptoms. Six have bladder distress, but have been operated less than two years. Of the total twenty-two operated cases of the thirty in both groups, there have occurred two deaths—a mortality of 9.9 per cent. In the unoperated, there is a mortality of not less than 33 1-3% at the present time.

I shall not give the pathological findings in these cases because of limited time. These findings are of decided interest from a prognostic standpoint. Let me say in conclusion that operative mortality in properly selected cases of tuberculosis of the kidney is a negligible factor. The late mortality—five years or less after operation—has been 9.9 per cent. Eighty five to ninety per cent of all patients subjected to nephrectomy for tuberculosis of the kidneys should recover, and you should expect a complete cure in 70 per cent of all cases.

TUMORS OF THE BLADDER*

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An accurate knowledge of primary tumors of the bladder has only become possible since the invention and development of the cystoscope. About one-fourth of one per cent of all tumors of the body occur in the urinary bladder, and about four per cent of all urinary cases present themselves with bladder tumors. Males are affected three to five times as often as females, and the disease is most prevalent during middle life. The most practical and accepted classification is that made by Kuster and modified by Davis. It is as follows:

- I. Epithelial Group—Papilloma
  - Carcinoma
  - Adenoma
  - Cysts (dermoid)
- II. Connective Tissue Group—Sarcoma
  - Myxoma
  - Fibroma
  - Angioma
- III. Muscular Group—Myoma

The papilloma occurs most frequently of all tumors of the bladder. This tumor involves only the mucosa and submucosa. It has a branching connective tissue center, surrounded by a fine network of vessels, and is covered by epithelium. It bears a marked resemblance to the vegetable cauliflower, having a distinct small pedicle. This tumor was originally classified in the benign group, but due to its tendency to repeated recurrence, it is now recognized as a more formidable tumor and is classified as a tumor with a low grade malignancy. The papillomas and carcinomas comprise approximately ninety to ninety-five per cent of all malignant lesions of the bladder. Carcinomas of low grade are sometimes scarcely distinguishable from papillomas, but careful examination will disclose its tendency to greater infiltration of the bladder wall. Scirrhous carcinoma is uncommon and adenomas are likewise quite rare. Adenomas are characterized by branching tubules with a single layer of cylindrical epithelium and they are usually flat or nodular in form.

Sarcomas and myxomas occur occasionally, and when found are usually in children. Sarcomas grow with great rapidity, occasionally attaining a large size within a few weeks' time. Fibromas, angiomas, and myomas, are not common and are considered benign tumors. However, the irony of the term appears in the remark of Morton, who says: "Benign tumors, if left alone may cause death, either from repeated hemorrhages or from pyelonephritis following cystitis. They can be readily removed by operation but are apt to grow again".

Very little is known about the etiology of bladder tumors. Areas of mucosal degeneration, showing granulating surfaces, may be observed over long periods of time, but to my knowledge, no one has ever seen a malignancy arise from them. In the presence of repeated irritation, as from calculi, tumors are seldom seen to arise. Furthermore, it is well known that tumors and stones are seldom associated, except for the small incrustations which may occur from the deposits of salts on the bladder wall.

The earliest, most enduring and most characteristic symptom of bladder tumors, is hematuria. This symptom is erratic in its appearance, and this uncertainty and apparent lack of reason may be taken as an earmark of tumor. Acting as a foreign body, a vesical tumor supra-induces irritation and vascular changes that result in infection and cystitis, which add its quota to the symptomatology. Malignant tumors in the latter stages, also place the stamp of their toxic influence on the patient, resulting in debility and cachexia. If these cases are not treated, the patient's declining days may be spent in distress of the most severe character. These symptoms are the result of ulceration at the site of the tumor, causing a severe cystitis and secondary pyelonephritis, together with more or less infection of the lower urinary passages.

While the history and clinical manifestations may give sufficient evidence for a presumptive diagnosis of tumor, this can only be confirmed by the cystoscope. In addition to confirming the actual presence of a tumor, the investigator must be prepared to determine as accurately as possible, the location, appearance and number of tumors present. A specimen of the tumor tissue should also be obtained to determine the degree or grade of malignancy with which we are dealing.

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Frater, in studying epithelial neoplasms of the urinary bladder, has proven that there is no variation in the grade of malignancy in different parts of the same tumor, and that one is absolutely safe in grading the malignancy of a tumor from a specimen, which is removed through a cystoscope. This is important, because our treatment will vary greatly in attacking the different grades of tumors.

Epitheliomas of the bladder grossly and clinically manifest various degrees of malignancy. Broders has presented data on the microscopic differentiation of these various grades of malignancy, which provides a guide to the therapeutic measure and also serves as a means of relative prognosis. On the basis largely of cellular differentiation, he classes epitheliomas in four grades, grade I being the least malignant, and grade IV being the most malignant. Hunt has reported a series of 480 graded epitheliomas, the incidence was as follows:

Grade I	10%
Grade II	32%
Grade III	35%
Grade IV	23%

In this series, 58% of the tumors were of a high degree of malignancy.

The site of the tumor also appears to have some bearing on the degree of malignancy. There is a tendency for the development of highly malignant epitheliomas in the base of the bladder, those of lower grade being in the lateral walls and the dome. In the series quoted, of the one hundred and fifty epitheliomas of the base, 64.6 per cent were of high degree malignancy, as opposed to 53.6 per cent of the 214 epitheliomas of the lateral walls and dome. Thus, much better results may justifiably be expected in the treatment of tumors of the lateral wall and dome, than if situated elsewhere. The lesions which are graded I and II are most often confined to the mucous membrane, while those graded III and IV infiltrate the wall of the bladder, often with extra vesical extension.

At present little uniformity exists in the treatment of malignant lesions of the bladder. Certainly the time of instituting treatment has a significant bearing on operability, and on the results of treatment. Excepting those lesions amenable to trans-uretheral electrocoagulation, a most conservative estimate, places the inoperability of the major malignant lesions at not less than 25 per cent. Hunt, in reviewing fifty-one cases in which the disease had advanced so far that it was not thought advisable to attempt any form of treatment, found that the average duration of symptoms was almost two years. Thus it seems that improvement in our method of treatment is dependent, not so much on the institution of more radical measures than have been employed in the past, as on earlier recognition, and opportunity for the application of recognized therapeutic procedures.

Regional anesthesia is usually most satisfactory for all types of operations on the urinary bladder. This consists of doing a complete sacral block, using one per cent novocaine, following this with an abdominal block, using one-half per cent novocaine. Should this injection not be sufficient, the patient can be carried under a very light gas anesthesia. Occasionally, novocaine will cause a marked decrease in the blood pressure and a slowing of the heart rate. This effect is most easily counteracted by the administration of epinephrin or ephedrin. At present, papillomas of the bladder are most satisfactorily treated by trans-urethral fulguration. In many cases, multiple papillomas may be found scattered throughout the entire bladder. By systematically destroying all the individual papillomas by fulguration, one accomplishes all that could be expected from operation. Complications, which so often arise as a result of operative procedure are also avoided. Practically all fulgurations can be done under sacral anesthesia. However, if many tumors are present, repeated fulgurations may be necessary. The danger of hemorrhage is very small. Should bleeding occur, it can always be checked by further fulguration. After the destruction of all papillomata, daily bladder irrigations are used to keep cystitis at a minimum. A follow-up record should be kept on these patients. They should return every three months during the first year of observation, and every six months for the next three years thereafter. This is imperative as papillomas are especially liable to recur. Also, small papillomatous growths may have been overlooked during the previous procedure.

Small angiomata and single or multiple small low grade lesions, are amenable to trans-urethral electro-coagulation. In all other types of tumors, whether benign or malignant, the operative treatment is the treatment of choice. In considering all benign tumors of the bladder, myomas are probably the most common. Watson, in reviewing 653 cases of bladder tumors, reports 20 myomas. In sixteen of these cases, the tumors were removed by supra-pubic operations, thirteen of the patients surviving. Five of these thirteen cases were reported as having recurrences. Thus, we must realize, that to successfully remove a benign tumor, we must resort to fairly radical resection.

Malignant tumors of the bladder should be classified according to their situation, into two groups: First, those confined to the lateral wall, posterior wall, and dome; second, those of the base, which involve one or both ureters or the internal urethral orifice. Many methods of treatment have been devised especially for malignancies in the base of the bladder. Barringer, Keyes, Bumpus and many others have recently reported their experiences with various physical agents in the treatment of these tumors. Bumpus, in a review of 212 cases, in which radium alone, or radium in conjunction with some other form of treatment was employed, gives the following conclusions: "First, radium treatment followed by operation, produces poor results. Second—radium treatment alone is not successful in cases in which other methods of treatment cannot be used. Third—radium is most useful in association with fulguration or operation.'' From our present knowledge of the results of the various methods of treatment, one must conclude that an operable malignant lesion of the bladder is most successfully dealt with surgically. Surgeons naturally differ in their opinion regarding operability. Most tumors of the dome, lateral or posterior wall are operable. If the tumor is of a low grade and not of the infiltrating type, it can be removed by excision. All highly malignant tumors should be treated by bladder resection. Tumors in the base of the bladder with extensive involvment, and infiltration, are often inoperable. In treating malignant disease, it is justifiable to operate, even when confronted by a high mortality. The grade of malignancy furnishes an excellent guide to the magnitude of the contemplated operation. When treating a low grade malignancy, the prospect of cure is much greater than if it were high grade malignancy in the same situation. Hence, we are justified in taking a greater risk to obtain a greater relative prospective cure.

It has been said that "a surgical procedure is hardly justifiable if it subjects the patient to a relative percentage of risk, higher than the relative percentage prospect of cure." In order that we may have an idea as to the number of cures, we may expect in the various grades of malignancy, it is very interesting to note the following figures: Three hundred and seventy cases of graded epitheliomas of the bladder were studied at the Mayo Clinic. They found that 65 percent of the patients on whom radical operations had been performed, with lesions graded I and II and 34 percent of the patients with lesions graded III and IV, lived three or more years, free of recurrence. These cases were picked irrespective of the size or situation of the lesion, or the magnitude of the operation. In comparing the lesions which were on the lateral wall, posterior wall and dome of the bladder, and the lesions of the base of the bladder, the following interesting facts arise. Approximately 50 percent of the patients with tumors of the base, graded I or II, and 25 percent with tumors graded III or IV, lived three or more years. In those cases in which the tumors were of the lateral or posterior walls or dome, approximately 73 percent of the patients with tumors graded I or II and 42 percent with tumors graded III or IV are living three or more years after operation. In studying the mortality of these cases, the mortality on operations of the lateral wall, posterior wall, or dome was 8.8 percent, while the mortality for operation on the base of the bladder was 21 percent.

In treating inoperable cases, we are sometimes forced to perform palliative surgical measures. Complete urinary retention, or obstruction at the outlet of the bladder, sometimes necessitates a palliative supra-pubic cystotomy. Excessive bleeding may be controlled either by transurethral fulguration, or by opening the bladder and using a Percy cautery. Bumpus reports a series of thirty cases in which extensive inoperable tumors were destroyed by cautery. Seven of these patients have lived for more than four years.

In discussing curative surgical procedures, we shall again separate operations on the base of the bladder from those situated elsewhere. Segmental resection is the operation of choice in all infiltrating lesions of the later wall, posterior wall and dome. The entire thickness of the bladder wall is resected, together with all adherent paravesical tissues, including the peritoneum. This resection may be done either with a knife or preferably with a cautery, carrying the incision through the normal wall of the bladder at least 1 cm. lateral to the margin of the lesion. Before attempting resection, the involved portion of the bladder should be carefully mobilized, as this facilitates the operation. Low grade malignant lesions, involving only the mucous membrane, may be treated by local excision by knife or cautery. Resection of the entire bladder wall carries a slightly higher mortality, but also a higher percentage of cure. Radical surgical procedures are necessary when operating on tumors of the base of the bladder, because one or both ureters are usually involved. In this situation, we have the choice of either resecting the ureter and reimplanting it back into the bladder, or ligating the ureter.

By ureteral reimplantation, the risk of the operation is greatly increased. Pyelonephritis almost invariably results from this procedure. Quite often reimplantation of the ureter is followed by a nephrectomy, because of an infected hydro-nephrotic kidney. On the other hand, ligation of the ureter is occasionally followed by nephrectomy. In quoting Hunt's statistics in fifty-two cases in which ligation of the ureter was done, there was a post-operative mortality of 14.4 percent. In forty-seven cases, in which the ureter was reimplanted into the bladder, there was a mortality of 32 per cent. The clinical cause of death in each case was ascending infection as shown at necropsy. Thus, it seems that when it is necessary to sacrifice one ureter, ligation is the treatment of choice. When both ureters are involved, some authorities advise total cystectomy with transplantation of the ureters into the sigmoid colon. This procedure is attended by such a high mortality as to make it impractical. In these cases, trans-vesical electro-coagulation is preferable, because the extensiveness of the lesions will not permit resection. Occasionally as Beer, O'Connor, and others have shown, very startling results may follow this type of treatment. Post-operative recurrence or extension of the tumor regardless of the method of removal, often occurs, usually in the form of implantations or contact transplants. Recurrence as a result of transplants occurring during the operation can be minimized, by taking precautions regarding the toilet of the wound and the operative field. Beer recommends an alcohol bath of the wound at conclusion of these operations.

Every case of bladder tumor should be followed up and examined cystoscopically every three months during the first year and six months during the succeeding three years. Recurrent tumors must be treated immediately by transurethral fulguration. The patient should also be instructed that bleeding is a symptom which is usually indicative of recurrence, and should it occur, they should return immediately for further treatment.

THE INCREASING VALUE OF THE AUTHOR'S CAUTERY PUNCH OPERATION FOR THE RELIEF OF OBSTRUCTIONS AT THE BLADDER NECK*

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It is indeed a very high honor to participate in the annual meeting of your State Association and in order to express my keen appreciation, I have chosen to discuss with you a subject which has been of deepest interest to me for the last ten years, namely the value of my Cautery Punch operation for the removal of prostatic obstruction. This has served a dual purpose: in lessening the necessity for major surgical enucleation operations upon this organ, and in offering a definite solution as to the nature and character of prostatic hypetrophy.

It would be of no particular interest to trace the development of prostatic surgery in detail; I shall simply mention some of the high lights along the paths of progress since the year 1628 when Riolan first announced the relationship between diseases in this gland and urinary obstruction. Indeed prostatic surgery dates back to very early times and in those days, simple technics such as incision of the orifice were in vogue. Later, as you know, surgical development concentrated around this organ, when Guthrie opened this chapter in 1834. Then McGill, Belfield, Fuller, Freyer, Young, Proust, and many others added improvements in technic. At the present time the surgery of the prostate is in a very highly perfected technical state.

Great advances in anesthesia, general, local and regional, contributed tremendously to the success of the surgery of this gland.

Improved diagnosis offered by cystoscopic study revealing not only the disposition of the growth but of associated lesions gave great impetus to its surgery.

One of the most important eras came with the knowledge of renal capacity and the effects of obstructive lesions of the lower tract upon renal integrity. The development of renal functional tests, studies of blood chemistry and the effects of careful decompression drainage have probably been the most valuable assets in placing prostatic surgery in the realm of safety.

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*Read before Nebraska State Medical Association, annual meeting, Omaha, May 15, 1929.

But with all this improvement and present day knowledge, unfortunately, the mortality rate of prostatic surgery is entirely too high. A most conservative estimate would be in the neighborhood of five per cent even in the hands of the expert and certainly a cross section of the country's prostatic mortality would picture a much higher rate.

For this reason there has been a tendency during the last two decades on the part of urological surgeons to attempt to reduce the necessity for major surgery by the institution of other less formidable measures. The most progressive step was made in 1909 when Young presented his median bar incisor for the removal of such lesser obstructions.

It has been shown that about fifteen per cent of all obstructions are of the lesser type, namely, bars and contractures of the vesical neck, and suitable for such surgery.

In 1919 I developed the Punch which I am discussing today. This instrument was created to minimize hemorrhage and lessen obsorption by means of its cautery attachment. It was soon found that with this method the smaller obstructions could be effectively removed and definitely cured. So that there was no excuse for open surgery in this type of obstruction.

As time went on, I began to utilize this instrument in some of the larger, more borderline growths. This was started on bad surgical risks on whom major operations would have been too hazardous and it was promptly found that the results obtained in these larger growths were definitely as good as in the smaller obstructions.

The striking phenomenon observed in operating upon these large obstructions was that after the removal of but small portions of these growths the remainder of the gland diminished in many instances in surprisingly short period of time to normal dimensions. The tissue removed at operation was histologically typical of what has been considered neoplastic.

In following this operation in quite a large series of cases of obstructions, this same transformation of growth has been observed. It would seem, therefore, that this gives us a clew to the origin of prostatic over-growth in many instances. It has been estimated that thirty per cent of men beyond fifty have prostatic enlargements. It is quite unreasonable to believe that a tumor should effect the prostate out of proportion to any other gland or organ in the human body.

Because of the great frequency of infections in the prostate in early life it would not be surprising to find infection in the background of late lesions in this gland in such a percentage as we see hyperplasia. To substantiate this I analyzed the cases of prostatic inflammations which have been under my observation and found it extraordinarily rare for a prostate which has been treated for a chronic infection to develop an over-growth later in life. In other words, the relief of infection protected against late pathological over-growth. On the other hand, I have seen over one hundred patients presenting various degrees of prostatic enlargement with obstructive symptoms, many with complete retention who have been entirely relieved of the symptoms of prostatism and have perfectly normal prostates today without any method of surgical attack. Local treatment sufficed to effect a cure. Many of these patients have been followed from five to eighteen years and have shown no tendency to recurrence.

The process of absorption in many of the larger obstructions following the relief of tension at the orifice after the obstruction has been removed, has in many instances, been rapid. It results unquestionably from the relief of congestion, edema and the absorption of inflammatory hyperplasias as in other parts of the body. Many of you have observed chronic cervicitis with large inflammatory hyperplastic growths which have rapidly subsided after incision and free drainage.

It is evidently true that the various acini of the prostate have harbored infection due to blockage of their excretary ducts and that this process has been going on over a period of years because of inefficient drainage. With interference at the internal orifice of the bladder, edema and congestion is super-imposed and it is after the relief of this with incision and drainage that rapid obsorption may be expected. Many pathologists have felt for years that considerable number of prostatic hypertrophies, the so-called adenomas, were inflammatory in their nature. Ewing has been a very ardent advocate of this theory but had nothing but histological proof since the prostate was either left intact or completely removed. It is through this instrument then that for the first time there has been a definite answer given that many such lesions are inflammatory—not tumors.

Following this lead I have been able to apply this operation to over forty per cent of all obstructions at the internal orifice of the bladder with the most gratifying results, and indeed during the last year to at least seventy per cent.

These instruments are made in two models, one for low voltage transformer which is made in three sizes, namely, fourteen, twenty-six, and thirty French. The size 14 is for children. The other is a high frequency model made in size thirty only and was put in operation January 1, 1928.

The low voltage type instrument was perfected in 1920. In this instrument the outer sheath with its obturator carries the lamp attachment for observation and is detachable. The Punch tube carrying the blade which does the cutting, telescopes back and forth inside the sheath. A specially constructed syringe which fits the two cc Luer glass syringe is furnished with the instrument to infiltrate the orifice with anesthesia. The Punch tube with its circular platinum blade and electrical connection is the most important part of the instrument. The platinum blade itself being one-quarter of an inch wide and full diameter of the Punch tube. All electrical currents require two wires to give service, one wire conducting the current to the instrument and the other conducting it away. As part of the Punch tube there is furnished a cord connection having a handle which fits the Punch tube with a slip joint. It is detachable and supplies the current. The bronze tube itself being grounded conducts one side of the current to the platinum blade which is securely attached thereto, while the current is drawn away from the platinum blade by the attachment of an insulated rectangular copper bar passing through the center of the punch tube. At the outer end of the punch tube suitable electrical connection is mechanically formed as part of the handle to the tube.

The alternating current supply of one hundred and ten volts is run through a transformer which is ground free and in turn lowers the voltage to six volts and transforms the Amperes to about one hundred, suitable to heat the platinum blade, in varying degrees of heat according to the case at hand. It will be seen that six volts cannot possibly give any one a shock and it is almost impossible to short circuit. The interval of time that the instrument is being used, not being more than two minutes, does not allow the instrument to become heated.

The problem of electrical insulation has been evolutionary, the present electrical insulation being much better than when the instruments were first made. Changes have been made in the instrument from time to time. The platinum blade has been changed to a more expensive alloy of iridium and platinum, which is very hard and does not soften with heat and gradually these blades have been made thicker and their supports larger, yet not interfering with the working of the instrument, but making its useful life longer. The sheath or outer tube has undergone changes from time to time and is now made in one piece, the reinforcement at the slot opening of the sheath tube, formerly an extra piece being soldered on, is now not needed as this reinforcement forms a part of the original tube of the sheath and is made of hard drawn bronze which remains rigid for all time.

The new high frequency punch instrument differs from the former model in that the outer metal sheath has an interior insulation of Bakelite throughout its length, but the punch tube has no metal except the blade and the part of the outer handle. It is especially insulated to carry the high frequency current through its center forward to the blade, the exposed part of which is very narrow in width and forms part of a steel cylinder deep enough to cut the width of a thumb. There is but one electrical connection the bi-polar high frequency current being used, the other wire being attached to metal pad placed at the patient's back.

Thus it will be seen that the current must pass through the patient's body in order to operate the instrument. The patient does not feel the current and twenty-five hundred mili-ampere de-Arsonaval current has usually been found sufficient.

In the low voltage instrument, the platinum blade of the punch had to be divided throughout its width in order to pass the current around the circular blade to make it red hot. This division was only hairs breadth, the blade being so anchored to the punch tube as to not allow this division to interfere with the cutting of the instrument. In the high frequency instrument this blade is closed and is a one piece steel cylinder about one inch long, the cutting edge of which operates practically cold. It is impossible to bend or burn out this type of blade, while if the operator imposed too much current on the low voltage platinum blade there was a possibility of melting it, just as a lamp would be burned out if too much current would be applied.

The theory of cutting with the Caulk punch for high frequency current is rather interesting and success was found to depend upon the depth of the cutting blade which was exposed in the tissues and this depth seemed to bear some ratio with the diameter of the punch tube. The exposed part of the blade has definitely been determined to be one-sixteenth of an inch wide for the size thirty instrument, a wider exposure chokes the instrument. The plain circular tube blades made like the non-electrically operated punches positively will not answer for this purpose. All insulated parts of the Caulk punches are now made of bakelite in various compositions most suitable for the particular part, as this has been found by experiment to be the hardest and best insulator.

The technic of the operation is simple and yet it requires a thorough familiarity with the endescopic appearance of the urethral orifice. The operation is entirely a visual one and obstruction can be definitely seen at any part of the orifice; the instrument may be rotated at different segments and locate lobules which have been previously determined by cystoscopic study. The visualization of the orifice is perfect and in the hands of trained men it seems to me impossible that one should have any difficulty in knowing the exact nature of the tissue secured in the slot of the instrument.

It is perfectly true that in untrained hands difficulty may be experienced, but this is true with any type of surgery.

The instrument is passed into the bladder after cocainization of the urethra, bladder contents evacuated, and, for the median incision, which is the most frequent one, the instrument is pulled outwardly and elevated at its distal end so as to grasp the obstruction in its slot, the obturator having been previously removed.

With the obstruction in the slot of the instrument the field is dried by suction syringe and the obstruction is visualized by reflection light. It is perfectly easy to differentiate between vesical mucuous membrane and the internal orifice of the bladder. With the orifice in the slot, the instrument is pressed downward with the little finger of the left hand, upward with the thumb and pulled outward, the vesical orifice is squeezed forcibly into the instrument. Under vision the orifice is then infiltrated with one per cent novocaine through the special syringe.

Following this it will be noted, in most instances, that the orifice relaxes and more tissue may be compressed into the slot. The field is thoroughly dried again by suction and cotton pledgets. neck inspected, then the cautery blade is inserted into the sheath until it meets the obstruction. The amount of heat has previously been tested, the operator then asks for the current to be applied, waits until the frying sound is heard. It is then evident that the heat has reached the blade. If the blade is pushed home before this there is danger of breaking it. This is a very important point and has been responsible for the breaking of many blades in the hands of those who were a little hasty in the cutting of the orifice. When the current is properly applied the operator with his right hand pushes the cautery attachment home by a gentle rotary motion, this takes about four seconds. In case of excision of one single segment of the orifice the operation is over. If one desires to remove one or more bits, the instrument is pushed inwardly into the bladder and the current lightly applied to coagulate the tissue within the blade. In this way it may become adherent to it so as to allow its removal. When it is removed from the sheath the tissue is extracted from the blade and the blade cleaned for another burning. The operator in the mean time engages the orifice and rotates the slot of the instrument to a desired location and notices the lobule fall into it. This is perfectly plain when the obstruction is within the grasp of the instrument. The same process is repeated as has been given above. I have removed as many as six pieces from the orifice at one sitting. The operation is usually painless as far as the burning is concerned, and is entirely visual. I have demonstrated frequently that the prostatic orifice has an entirely different appearance from the urethral or vesical mucous membrane that is is perfectly simple to engage a lobule at any segment of the orifice and to observe it even after several previous incisions because with the obstruction within the slot of the instrument, the pressure of the instrument against the obstruction is so firm as to prevent water and blood from entering and the field may be kept perfectly dry. The mistake that some men have made in manipulating this instrument have been they have not made sufficient pressure against the orifice in doing the operation.

In the removal of pieces from the upper or lateral sphincter margins it is sometimes quite unpleasant to the patient on account of the position of the instrument and the tension on the triangular ligament.

The blade of the instrument requires very careful attention, but, with proper care, it is very durable. I have the original blade of my instrument which has been in use for nine years and it has been repaired but once and that simply for tightening a set screw. Some operators have complained that the blade is delicate and that they have experienced trouble with the current. For this reason I have had constructed a high frequency cautery blade which is very substantial and does not require the delicate attention necessary for the cautery blade. It can be used with the ordinary high frequency apparatus. It works very satisfactorily and it has the advantage that the operator is able to manipulate the current himself and is not dependent upon an assistant. The burning is rapid and effective and as far as I have been able to determine, the removal of the obstruction is about the same as with the simple cautery instrument.

At the completion of the operation which usually takes but a very short time after one has gained experience, a large indwelling catheter is inserted, fixed and irrigated to be sure that it is in proper position, some fluid allowed to remain in bladder and the catheter is corked. Patient is put to bed, the cork is removed and continuous drainage instituted. It is important to have a large catheter, at least a number twenty-six to a thirty French, with two eyes. In this way free drainage is given and clots are prevented.

There has never been any trouble with bleeding or any real discomfort in the post-operative course unless clots occluded the catheter. This is the very important point in the post-operative care. For several hours these catheters are watched very carefully, a receptacle of sterile solution and an aspiration syringe are kept at the bedside. If there is any impediment in the drainage it is promptly taken care of. The care of the first few hours is most important. If the drainage promptly clears and in many cases there is absolutely no staining, the catheter is corked and patient allowed to remove the cork at intervals. Daily injection of argyrol or mercurochrome is given in order to keep the bladder and the orifice clean and to hasten healing. The duration of catheter drainage depends upon the type of obstruction and the associated conditions such as residual urine, toxemia and emptying ability. In simple cases it is removed in forty-eight hours. In cases with high residual urines and in large obstructions where a secondary operation is believed necessary it is allowed to remain for at least a week before testing the effect of the operation. If urination is imperfect it is re-inserted until the function is found satisfactory after its removal. These patients require very little sedative, the majority do not require a single hypodermic.

In previous communications I have analyzed all of the cases on which the cautery punch operation has been done and have shown that the symptoms, such as frequency, urgency, incontinence, uremia, etc., are identical to those occurring in the gross obstructions. Residual urine has been the same, ranging from one ounce to fifteen hundred cc, the prostate has shown enlargement in fifty per cent of all cases. The prevalence of retention and catheter life has been identical with the gross obstructions and hence offers no clinical differential value.

The interpretation of the type of prostate which is suitable for the cautery punch operation is dependent entirely upon repeated cystoscopic study of the vesical orifice under drainage as well as the transformation of the size of the rectal prostate. If under catheter drainage and splinting of the orifice, hot applications and antisepsis, the prostate begins to diminish in size, and if the cystoscopic appearance is not too gross, that is there are not large round intra-vesical lobes with deep clefts, and if the intra-vesical growth shows recession, there is a great possibility that the punch operation can be utilized very frequently.

I cannot urge too strongly repeated studies of the vesical orifice by means of the cystoscope and repeated investigations of the rectal prostate during drainage. Under this regime many of the prostates which appeared at first to be unsuitable for minor surgery will be found to diminish to such a size as to place them in such a category.

It is, therefore, seen that these patients must be prepared for the Punch operation by drainage in a manner similar to the preparation required for major surgery and often times even in a more protracted fashion.

I have employed this operation five hundred times and have repeatedly reported critical analyses of the cases. It has been definitely shown that the operation is effective in removing sufficient tissue to relieve obstruction in at least eighty-five per cent of all the cases in which it has been employed. There is no question that it is applicable to the smaller obstructions. This is accepted and it should certainly supplant any major surgical procedure for such growths.

I wish to devote the time today to directing your attention to the use of this operation in the larger obstructions and in stressing this phase I felt that an analysis of the recent cases on which there is not only a definite statistical study, but a freshness of memory as well, would be more effective. For this reason I shall discuss the one hundred and fifty-two operations which have been performed on eighty-nine patients during the last year and a half:

5	patients each had	5	operations
3	"	4	"
3	"	3	"
26	"	2	"
54	"	1	"

Thirty-seven patients, or forty-two per cent, had multiple operations. During the last six months about thirty-eight per cent had multiple operations.

The explanation of this is that more tissue is being removed at a single sitting than formerly. It is not uncommon in many of these larger obstructions to remove from three to four pieces at one operation instead of doing repeat operations for the removal of the same amount of tissue. Indeed, during the past week six pieces were removed. For instance, during the last year there have been fifty-four operations on forty patients. Of these twenty-five had single operations and fifteen repeat operations. Of the single operations eighteen of the twenty-five had more than one piece removed: Seven had two pieces, seven had three, three had four and one had six pieces removed. In other words, eighty per cent had multiple pieces removed from the orifice. This is explained by the fact that during the last year at least seventy per cent of all prostatic obstructions have been treated by the Punch operation instead of forty per cent, as was previously the case. Hence, after a period of ten years of application of this operation to different types of obstruction I find that it can be utilized in the majority of instances of prostatism and as time goes on and the profession becomes better acquainted and more familiar with the nature of the growth and treats early prostatic inflammations and urges the relief of early obstructions I feel that this percentage will be even more increased.

In an analysis of the size of prostate in the eighty-nine cases it was found to be small in twenty, large in twenty-nine, moderately enlarged in forty. In other words, sixty-nine of the eighty-nine patients, 77% showed a considerable degree of prostatic enlargement by rectal examination.

Cystoscopically, fifty-one of the eighty-nine patients or fifty-seven per cent, showed definite intra-vesical growth of the larger type, such as lateral and median lobes or lobules and large collar obstructions.

Two of the cases presented obstructions due entirely to intra-urethral lobules and in these cases three pieces in one and four pieces in the other were removed from the urethra by means of the instrument and one patient who had previously carried ninety-six ounces of residual urine and had used a catheter entirely for two years, passed six hundred cc immediately after the removal of the catheter following the operation.

It is evident, therefore, that during the last year I have removed, by means of the Punch, that type of obstruction which is currently subjected to prostatectomy. And, I can assure you that the curative results of this operation are comparable to open surgery and certainly more gratifying. About eight-five per cent have been completely relieved of their symptoms of obstruction and restored to health without a single mortality. As a matter of fact, in the five hundred operations there has not been a single death directly attributable to the operation.

Six per cent with the patients of the larger type obstruction required later prostatectomy. Many of these could have been cured by the Punch had they submitted to repeat operations because I have cured several patients with larger obstructions than some of these who went to prostatectomy.

It is necessary to relate that in no instance was there any indication of scarring of the prostatic orifice following these previous punches, tissues were soft and pliable and the previous punches had in no way interferred with enucleation of the prostate at prostatectomy.

Thus it is obvious that the size of the prostate is not the sole criterion of symptoms nor does it signify the type of surgery which is to be required. We are often misled as to the size of a prostate, innumerable patients have large prostates which cause them absolutely no symptoms whatever and are accidental findings. The same identical prostate in another individual may be causing complete retention and the unobstructing prostate of today may create complete retention tomorrow without much apparent change in its topography. Therefore, why should we remove it at all under such conditions?

The chief factor in securing a result is to be convinced that the growth can be removed and to not become discouraged if one, two, or three operations do not effect a cure; some of the best results have occurred after the fourth or fifth operation where there had been no previous improvement. Many of these patients were extremely bad risks and those who would not tolerate major surgery with any degree of safety. There was no mortality following any of these operations.

A number of these individuals had associated lesions such as central nerve conditions, stone, and diverticulum. It is, of course, at times risky to operate on the tabetic bladder but we have several very pleasant results after relieving the mechanical feature of obstruction.

The association of vesical calculi with prostatic obstruction is a frequent one and about fifty per cent of stones in the bladder may be removed without cystotomy by means of litholopaxy or crushing and evacuation. Following the stone crushing the internal orifice of the bladder often becomes so transformed and reduced in size that it may be removed by the punch where it previously appeared too large. The size of the stone or multiplicity bears little influence on the character of surgery.

The association of diverticulum, however, in such instances sometimes offers a contra-indication. At any rate the combination of the punch operation with litholopaxy will save many patients from major surgery.

If the diverticulum of the bladder is not too large and if it is emptying and not too severely infected, the relief of obstruction at the neck in an aged subject may be all that is necessary. It has certainly proven so in an analysis of our series of cases.

I have used this operation in forty-six cases of carcinoma of the prostate with some very gratifying results. In quite a number of patients with inoperable carcinomas with metasteses who were suffering with extreme bladder discomfort the punch operation has given complete restoration of ordinary comforts with durability of two and one-half years in several instances.

A number of these patients have had recurrence of obstruction and have required repeated operations to keep them comfortable; four of the patients were not relieved, usually because of the size of the obstruction and its rapid recurrence. At any rate, the operation offers the most pleasant method of handling the obstruction in carcinoma and is certainly to be recommended instead of supra-public drainage.

I wish to present also a child's punch, a miniature of the cautery apparatus. This instrument is designed for the congenital obstructions so frequently seen at the internal orifice of the bladder in babies and young children. These obstructive conditions are responsible for so many deleterious effects upon the kidneys and are creative of a very high mortality rate if left untreated.

Clinically these cases are the ones which appear as a protracted pyelitis or those with recurrent attacks of pyelitis. It is almost invariably true that obstruction with stasis is present somewhere along the urinary tract, most commonly the vesical end of the ureter or at the internal orifice of the bladder. It is in this latter group that the child's punch will serve a definite purpose.

Under ordinary conditions these cases are surgically handled by supra-pubic operation with resection of the internal vesical orifice. Proportionately this instrument is capable of removal of as much tissue as the large one extracts from the adult orifice and I believe will correct such defects in a large percentage of cases and should transplant open surgery to a great extent.

Totaling the results obtained by this operation in all of the types of obstruction in which it has been employed over a period of nine years, it is found that eighty-five percent have been perfectly satisfactory. It is a type of surgery which is not a mere cutting of the orifice which requires but a few minutes, but one which necessitates a great deal of attention and pains and knowledge of conditions. Many whose results were apparently imperfect have been completely cured by repeated operations. It is this familiarity with the orifice and the belief in the adaptibility of the operation which in many instances insures a favorable outcome.

Frequently the operation requires more time than prostatectomy. That is in cases where several operations are necessary for larger obstructions but these are chiefly in bad surgical risks and usually done to protect against a mortality. There has never been a death in the 500 operations due to the operation. About a year ago a patient died on the eighth post-operative day, after a simple median bar excision. The patient obtained a complete relief, was feeling perfectly well and had not had the slightest trouble from the operation. He fell dead of an old myocardial condition which had caused him many previous serious attacks. His death had absolutely nothing to do with the operation. Another patient with very advanced carcinoma of prostate died in the hospital later as a result of carcinimatous metastases and having had no untoward effects from the operation itself.

As a rule it saves the patients economically since the majority are confined to the hospital about a week and may attend to their business affairs in a short time after the operation.

Complications have been rare.

The superficial burning has served a minimize hemorrahge. All patients have slight staining of the urine. There have been but a very few individuals who have caused any concern regarding hemorrhage. There were but thirteen patients of the 500 operations who have attracted attention from hemorrhage. If the catheter is large and the eyes are free and care is given the first few hours one should expect very little trouble with bleeding. Our experience has been that one small clot occluding the eye of the catheter creating spasm of the bladder is the important factor in the causation of bleeding. It is important to see that the catheter is thoroughly fixed and that it does not have to be manipulated or reinserted. There has never been a hemorrhage sufficiently severe to require suprapubic cystostomy.. There have been but few instances in which evacuation of the clots with the Bigelow evacuator was found necessary.

Chills and fever have occurred very rarely. In all there have been but twenty-five patients of the 500 who had reactions following the operation and practically all of these reactions occurred in patients who had been previously suffering with pyelonephritis. They all subsided promptly under palliative treatment and in only one instance was drainage necessary.

Epididymitis has followed its usual tendency to make the post-operative course of urinary surgery unpleasant. It, however, has occurred less frequently than following the use of the indwelling catheter for prostatic drainage. Hence, there is nothing specific about this operation in the promotion of epididymitis.

Pronounced sloughing has never occurred following the operation, nor have I ever seen incrustation of the orifice. The burning is superficial if done properly and should have no tendency to cause extensive reaction. Sections removed allow thorough microscopic study.

I have been asked many times if incontinence of urine had ever occurred following the operation. I have never seen incontinence and one should not expect it. We do not hesitate in prostatectomy to remove the prostatic urethra and insult the sphincter to an extreme degree, hence it should not be anticipated following a much more simple operation.

There has never been the slightest disturbance of the sexual apparatus.

I have never seen a stricture of the urethra develop following the operation. This could only occur in instances where the current had not been disconnected and unnecessary injury done to the urethra itself.

The operation has been very valuable in hastening the closure of indolent supro-pubic fistulae and has been used for the removal of obstruction in 8 cases on whom supra-pubic cystotocy had been done as the first stage operation but the obstruction had not been removed for one reason or another, usually some serious complication. In all of these cases information was obtained from the surgeon who had done the operation that the prostate was large and that enucleation was thought necessary. But when they came under my observation the obstruction had shrunk to such a degree that the punch operation was entirely effective in not only closing the fistula but in curing the obstruction.

In summarizing, allow me to suggest that the profession pay strict attention to the prostates of middle life and protect them from insiduous infections. The prostate must be examined as a part of a general examination, it should not only be palpated but its secretion should be expressed and microscopically studied. We find some of the smallest and softest prostates possess the most purulent contents. With this regime, the majority of individuals may be spared any type of surgery but if early obstruction becomes manifest it should be dealt by means of lesser surgery and not allowed to progress.

My results indicate that the operation can cure eighty-five percent of obstructions to which it is applied.

The operation is simple of technique, perfectly visual, but requires proper interpretation of the orifice picture and patience in the execution of the after care. It offers very little hazard to patients upon whom it is properly performed.

Complications are few and mortality is negligible.

DISCUSSION OF THE PAPERS OF DRS. WILLIS, McMARTIN, OWENS, MUNGER, SYNHORST, CAULK:

EDWIN DAVIS, M. D., (Omaha): I am sorry I have been detained and was unable to have heard Dr. Caulk's paper other than his closing remarks. I am familiar with his work—the punch operation. I remember years ago when he brought it out, and have followed it closely since. I am sure it is a conservative procedure in selected cases and even in a large majority of cases, and a procedure comparatively free from hazard in the minor operations which we should look for an opportunity to perform more frequently, and thus avoid more of our prostatectomies.

W. L. ROSS, M. D., (Omaha): I should like to say a word concerning the tuberculous kidney. It is conceded end results or operating on the tuberculous kidney are not always satisfactory. In 39.5 per cent, in two years' time, removing one kidney will result in infection of the opposite kidney. What will you do? You can not remove it. Has it anything in its anatomy to lend itself to the use of the x-ray? It surely has. It is richly supplied with lymphoid tissue, which is the home of tubercle bacilli anywhere in the body. Wherever Nature has distributed lymphoid tissue, it has put a stop to tuberculosis. This is illustrated in the case of pulmonary tuberculosis in which small lymphoid glands have been filled with calcium deposit, and also in your lymph nodes of the neck. You hardly operate for those any more. You use the x-ray.

I wish to cite one case in which the patient had one kidney removed, and tuberculous infection occurred in the other in three years' time. What was to be done. This patient I heard of eight years later and she was still entirely well. I present this as an example of what can be done in these cases of recurring tuberculosis of the opposite kidney, when it seems nothing else can be offered.

A. D. MUNGER, M. D., (Lincoln): I want to take issue with Dr. Ross on his advocacy of treating tuberculosis kidneys with x-ray. There is no scientific logic in it whatsoever. He quotes one case. He has no knowledge the opposite kidney had tuberculous involvement. I wish to leave this closing remark: It is absolutely unscientific and does the patient no good.

—723 University Club Bldg.

CURE

To follow a doctor's directions for a cure would be very easy for certain kinds of patients, but, well nigh impossible for others.

"Dey aint no justice no mo'," mourned Rufus to a friend. "Ah's a sick man. Guess Ah's gwine to die suah. De doctah says my veins is too close an' dat Ah got very close veins, an' de only help fo' me am to eat chicken broth three times a day an' stay in nights. An dat jes' can't be done."

EMPYEMA THORACIS*

HERBERT H. DAVIS, M. D., F. A. C. S.,
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The problems arising in the treatment of empyema are many and the care of such cases is very exacting. The difficulties in management vary with the type of organism responsible and with different epidemics. This year most of my cases have been due to the streptococcus hemolyticus and this type is notoriously prone to have complications.

Lilienthal gives the following classification depending on the location of the empyema:

A. Total or general.
B. Sacculated.
    1. Parietal.
    2. Mesial.
    3. Supraphrenic.
    4. Interlobar.

In the total or general type, which is very rare, the lung is contracted into a small mass at the hilus, with the purulent exudate filling the entire pleural cavity from the diaphragm to the apex. In the sacculated types, one or more sides of the empyema cavity is in contact with lung tissue. The parietal type has the pus next to the chest wall, the mesial next to the mediastinum, the supraphrenic next to the diaphragm, and the interlobar is between the lobes of the lung.

Time prevents any discussion of the diagnosis but I wish to emphasize one fact in regard to an interlobar empyema. As the interlobar septum of the left lung and the one between the middle and inferior lobes of the right lung is placed obliquely a thin layer of fluid may be overlooked by an antero-posterior roentgenogram. It may be demonstrated by a lateral view, or better, by having the patient standing before the fluoroscope move his hips forward so that his back is at an angle of about forty-five degrees with the screen. In this way the rays are parallel to the interlobar septum. This technique was demonstrated to me by Dr. Fleischner of Vienna, who claimed to have originated it.

In the management of empyema thoracis we must follow three main principles. Firstly, to save the life of the patient; secondly, to clear up the infection; and thirdly, to obliterate the cavity. Except during very virulent epidemics, and in children and the aged, we do not often see the fulminating type. A great deal was learned about this type in the epidemic of 1918.

Since the work of the American Empyema Commission in that epidemic we consider emergency operations in patients dangerously ill during acute stages of the disease are not justifiable. Unless pressure from the collection is so great that respiratory function is embarrassed or circulation is impeded, rapid removal of the fluid is not necessary; instead of saving life, it contributes to a fatal result in most instances. Death in the acute stage is not due to absorption of the fluid itself, but to disease of the underlying lung tissue. Too early operation results in collapse of the remaining air-bearing portion of lung tissue and insufficient oxygenation incident to pneumothorax.

I wish to draw many of my points from case histories of personally operated cases.

Case 1. K. E. University hospital 18665, age 19, developed pneumonia six weeks before admission. He was in bed two weeks. After this time he did not feel normal so saw a doctor who diagnosed empyema. At the hospital he had the typical physical findings of acute empyema of the left side, corroborated by the roentgenogram. His leucocyte count was 17,400, with 80 per cent polymorphonuclears, the erythrocyte count being 3,650,000 and hemoglobin 60 per cent. Aspiration of the chest showed thick pus, which a smear and culture demonstrated to contain the pneumococcus. Two days after admission the operation was performed, under local anaesthesia, using 0.5 per cent novocaine solution. He was placed on the operating table lying on his normal side and with a sand bag under his lower ribs. This arches the chest so that the ribs at the operative site are farther apart. This facilitates exposure and is very important. An incision four inches long over the eighth interspace from the angle of the ribs outward was made. The latissimus dorsi and intercostal muscles, and pleura were incised the entire length of the incision, letting the ribs separate which gives excellent exposure. The pus was evacuated with a suction apparatus. No sutures at all were used. Four drainage tubes, each one-half inch in diameter were inserted to extend just through the chest wall. These were carefully pinned together and to acriflavine gauze packed in subcutaneously.

The day after the operation the patient was put on a high caloric diet and began breathing exercises. All the tubes and gauze were removed, giving an excellent view into the cavity and collections of fibrin were removed with forceps. A few cubic centimeters of Dakin's solution were injected into the cavity, then a little more of the solution, proceeding very carefully to see that there was no coughing. In this case no coughing resulted so the cavity was irrigated with Dakin's solution until all loose fibrin was removed and the fluid returned clear. Four fresh tubes were inserted and also a Carrel-Dakin tube into the anterior angle of the wound. Dakin's solution was injected into this tube by the nurse every two hours day and night. Similar dressings were done daily. Eight days post-operative the cavity was reduced to 90 cc capacity, and eighteen days post-operative to 35 cc. Twenty-eight days after the operation the cavity was 18 cc capacity, while on straining it was reduced to 5 cc. He was dismissed thirty-two days after his operation, during which time he gained twenty-two and a half pounds. The wound at that time was not healed.

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*Read before Third Councilor District Nebraska State Medical Association, April 12, 1929.

A few days after getting home he got a very serious erysipelas.

The diagnosis in these cases are made from the history, physical findings, roentgen-ray, and aspiration. Aspiration is very important and should always precede operation. It shows the location of the fluid, the type of fluid, and the organism. If the fluid is thin and serous no open operation should be done as at this time no adhesions have formed and the operation would result in collapse of the lung, seriously embarrassing respiration, causing mediastinal flapping, and resulting in a large pleural cavity.

A smear and culture of the pus shows the organism present. A sterile culture suggests tuberculosis. It is important to rule out a tuberculous empyema. An open operation in tuberculous empyema usually results in a mixed infection and a sinus persisting, which is very difficult or impossible to heal. An operation in this disease will usually make the patient a chronic invalid for life. In the above case aspiration revealed thick pus, denoting pleural adhesions, and the organism was pneumococcus. Therefore, the operation was proceeded with at once. A delay after thick pus is obtained results in more thickening of the pleura which delays reexpansion of the lung. Except in infants the operation is performed with a local anaesthesia. Heuer had five deaths which he attributed directly to general anaesthesia. Three of these cases developed acute broncho-pneumonia and died, one died on the operating table from aspiration of pus through a bronchial fistula, and another died on the operating table from the anaesthesia, pleural reflex, or acute surgical pneumothorax. Aschner considers the so-called pleural reflex is really a cerebral air embolism.

With thick pus there is no danger of collapse of the lung and it is treated as an abscess. The treatment is adequate drainage. In the case report I described the incision I favor. It is called "Major intercostal thoracostomy." The main point is a long enough division of the intercostal muscles, which lets the ribs be well separated. Unless the patient is very emaciated so the ribs slant downward excessively, the exposure is excellent. In this latter case I do not hesitate to resect a rib. However, with rib resection four per cent of cases develop osteomyelitis in the ribs severe enough to demand operation. Osteomyelitis can be lessened by the use of bone wax to the cut rib ends, or to cauterizing the ends as Dr. Roeder suggested in his discussion of my paper on chronic empyema at the Nebraska State Medical Association in 1926.

The post-operative treatment is very important. Of course, the general methods of pre and post-operative treatment of any surgical case are carried out. Breathing exercises are begun at once for reexpansion of the lung. The exercise I prefer, if the patient can understand it, is a deep inspiration followed by an attempt at expiration with the glottis closed. In this way the lungs are filled with air at the inspiration, then, when the chest and adbominal muscles are contracted, air cannot get out of the lungs but rushes out of the operative wound to diminish the size of the empyema cavity. Blowing into Wolff bottles does not act to the same degree, as the air is blown out of the lungs also. In case of broncho-pleural fistulae breathing exercises do no good.

As soon as possible the patient is gotten out of bed, then when slightly stronger calisthenics are begun to prevent deformity, such as flattening of the chest, kyphosis, scoliosis, etc. Nutrition plays an important part. Bell, of the Empyema Commission states that these patients show a negative nitrogen balance on 1500 calories intake per day. This negative balance is the cause of emaciation and even of many fatalities in chronic cases. Therefore, give a mixed diet of 3,300 to 3,500 calories with milk and raw eggs between meals. This gives a positive balance and a gain in weight. This patient gained 22½ pounds in thirty-two days following operation.

In the daily dressings I remove all the tubes and gauze. This gives an excellent view of the cavity allowing removal of fibrin, breaking down of adhesions tending to wall off pockets, etc. As no sutures are taken in the ends of the wound there is little chance for infection there. Dakin's solution acts by its bacteriocidal power, its property of dissolving necrotic tissue so as to thin the pleura; and the irrigation removes all loose necrotic tissue with its myriads of bacteria.

This case went home before the cavity was completely obliterated. This is somewhat dangerous, unless very careful care is taken at home. At home he developed erysipelas. Heuer advises against dismissing cases with draining sinuses, as eleven per cent fail to heal. Also, convalescence in 75 per cent requires over three months, and many take six to twelve months.

In spite of the best treatment many cases will continue to have a fever and complications. If the temperature is not much reduced at the end of a week look for the reason. It is neglect of these cases that leads to empyemata becoming chronic. I have never yet sent out a patient with a chronic sinus. Some have required several operations but in the end results were always excellent. Some of the chief things to look for and treat to prevent chronicity are:

1. Open operation too early.
2. Operation too late.
3. Inadequate drainage.
4. Foreign bodies in cavity; as tubes, rib sequestra, etc.
5. Osteomyelitis of rib ends.
6. Broncho-pleural fistulae.
7. Multiple sacculations of pus.
    a. Communicating with main cavity.
    b. Not communicating with main cavity.
8. Fibrosis of the lung.
9. Tuberculosis.
10. Actinomycosis, streptothricosis, etc.
11. Syphilis.

Case 2. H. E. B. Clarkson 37715, age 65. Acute encapsulated parietal pneumococcus empyema following pneumonia. Similar treatment to the other case. In five days capacity of cavity reduced to one and one-half cubic centimeters. In twenty-one days cavity obliterated.

Case 3. M. B. University 13678, age 6. This girl had a series of very severe infections with high fever. It began with a peritonsillar abscess, then pyelitis, otitis media, broncho pneumonia, and pneumococcus empyema. I did similar treatment except that a rib was resected. Her result was remarkable, the temperature very rapidly became normal. In ten days she was dismissed completely well with the intrathoracic cavity closed.

Case 4. L. W., Immanuel 28920, age 3. Acute left streptococcus empyema following pneumonia. Used closed drainage five days after admission. The pus then was thick. The tube led to a bottle of fluid hung to the side of the bed to get a siphon action. Through a side tube Dakin's irrigations were performed daily. Twenty-three days post-operative the roentgen-ray showed the previous cavity completely obliterated. The tubes were then removed and two days later she was dismissed with the wound completely healed. She has remained well since.

I do not object to the closed method of treatment provided it is adequate. I like it especially on infants. However, if temperature persists a second operation should be done without delay. This should be an open operation with an adequate opening.

Case 5. A. H. Immanuel 24833, age 18. Rib resection elsewhere 17 months previously for empyema following pneumonia. Was dismissed from hospital ten days after that operation and has been unable to work since. He was very weak, tired, and emaciated when I saw him. He had considerable pus in the pleural cavity with the wound completely healed. With local anaesthetic I did a rib resection. He had similar post-operative treatment and was dismissed in twenty-three days with the chest cavity completely obliterated and with a gain in weight of 10½ pounds.

This case had become chronic due to inadequate drainage. The wound should not be allowed to close until the lung has expanded to completely obliterate the cavity.

Case 6, Mrs. V. F., University 27,400, age 23. Three months previously gave birth to a baby. Twenty-four days later had pain in the chest, cough, and fever. One month after onset of these symptoms a thoracostomy was done elsewhere. She states that about four liters of watery fluid was removed. Five days later she was dismissed, since when her condition has become progressively worse, with much loss of weight, cough, diarrhoea and pain. She has had swelling of feet, chills and fever of about 103 degrees F. daily. The wound continued draining and it soon became purulent. Roentgenogram showed complete collapse of the lung. The tubercle bacillus was recovered from the stool. She died about three months after the operation. Necropsy revealed miliary tuberculosis.

This patient illustrates the serious results following an open thoracostomy in the presence of serous fluid. The lung was completely collapsed and half of her thorax was one large cavity. I do not believe it would have been possible to obliterate it surgically. Secondly an open operation was done in tuberculosis resulting in a chronic sinus and fatal miliary tuberculosis.

It is interesting to note that this last winter at the University Hospital were two cases of streptothrix empyema, R. M. University 26676, age 26, operated by me, and E. C. University 26496, age 35, operated by Dr. Walters. These cases are characterized by the lesion disregarding anatomical boundaries. Both started in the lung and extended into the pleural cavity with very foul smelling pus and large broncho-pleural fistulae.

Due to thickened pleura it is often difficult to obliterate an old chronic empyema cavity. The main methods used are as follows:

1. Dakin's irrigations and breathing exercise.
2. Decortication of the pleura.
3. Discission of the pleura.
4. Closure of bronchial fistulae.
5. Thoracoplasty.
6. Fill cavity with graft of muscle, fat or skin.

The following cases illustrate these methods:

Case 7. R. W. B., Immanuel 21662, age 51, had influenza followed by pneumonia and empyema seven months previously. Six weeks after pus was aspirated, a rib resection was done elsewhere. Two weeks after operation a broncho-pleural fistula was demonstrated by injecting methylene blue into the pleural cavity. This he coughed up. He lost from 130 to 97 pounds in weight in two months following the operation when he was dismissed. He was coughing up pus. He continued to lose weight. The wound opened and closed about a dozen times. When open there was much less purulent expectoration. His temperature afternoons was about 100 degrees Fahrenheit. Six weeks after returning home his physician made a minor intercostal thoracostomy but this soon closed.

When I saw him he was in extremely bad condition, being six feet tall and weighing 83 pounds. He was in bed, apparently too weak to rise, coughed considerably, and spat up about eight ounces of pus daily. There was an imperfectly draining pyo-pneumothorax. I resected a rib, which showed osteomyelitis. About a liter of pus, showing a mixed infection, escaped from a very large cavity. The cough and expectoration ceased almost immediately. One month later the bronchial fistula had closed spontaneously and he had gained ten pounds. At three months with Dakin's irrigations, high caloric diet, breathing exercises, etc., the cavity was reduced to 50 cc. where it remained stationary. He had gained thirty pounds. Then a decortication operation was done. Two months later he was dismissed with a cavity of one cubic centimeter capacity. This has subsequently closed.

This case became chronic due to too late an operation, a broncho-pleural fistula, and most important of all due to inadequate drainage. A broncho-pleural fistula can be demonstrated by injecting a dye into the pleural cavity which colors the sputum, by injecting Dakin's solution which produces severe coughing and the patient tastes the chlorine, or by injecting lipiodol which a roentgenogram will show extending into the bronchial tree.

Pus takes the easiest way to escape. If the thoracostomy opening is larger and better placed for drainage than the bronchus, the drainage will be through the wound. This results usually in spontaneous closure of the broncho-pleural fistula. A two per cent alcoholic solution of gentian violet is used by Keller as a local application to the bronchus to aid closure. If these methods fail it is necessary to close the fistula by operative means.

In the above case dakinization and breathing exercises reduced an extremely large cavity to fifty cubic centimeters capacity. It cleans up the wound, removes the infection and results in a great improvement of the patient's condition. At times, as in case No. 5, it results in complete cure. When the cavity remains stationary and of the same capacity on straining as on ordinary respiration, one of the other methods should be used. The ideal method is to have the lung expand to fill the cavity as this increases vital capacity and produces no deformity. It is accomplished by decortication or discission of the pleura. In cavities of over three ounces, especially, this principle should be followed. In small cavities the other methods are good.

Case 8, W. H. M., Immanuel 23131, age 62, was a rather feeble man with auricular fibrillation and weak heart. I did the original operation and five others on him before he was cured. So many operations were necessary because his cardiac condition was too bad to allow any very extensive operation. Culture of the fluid aspirated showed streptococcus hemolyticus. I did the following operations:

1. Rib resection.
2. Opened secondary pus pocket.
3. Discission of pleura, very slight expansion due to fibrosis of the lung.
4. Resection tenth and eleventh ribs.
5. Resection seventh, sixth, and fifth ribs. He was in the hospital seven months and dismissed in quite good condition with cavity of one ounce capacity and lined with epithelium. Three months later he returned in good condition, but came because it was hard for him to keep the cavity clean.
6. Excised skin from cavity and inserted a pedicled muscle graft.

Dismissed three weeks later with the wound completely healed.

This case became chronic because of an imperfectly drained pocket of pus, thickened pleura, and fibrosis of the lung. It illustrates most all of the methods of treatment and shows that even a very weak patient may be cured by doing many small operations. At the present time he is working full time and feeling fine. There is still auricular fibrillation.

In conclusion I wish to emphasize the dangers of operating on a tuberculous empyema, the fact that a chronic empyema is usually the result of an improper treated acute empyema, and that most chronic empyemata can be cured by proper treatment.

STATE MEDICINE*

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We hear much about State Medicine in medical circles. To many doctors it is a spectre that haunts them by day and by night, while others in the medical profession believe State Medicine will prove to be a blessing to the public. All are agreed that State Medicine in one form or another is inevitable, but no one has as yet clearly defined the exact meaning of the term.

Assuming that we are to have State Medicine and that its operations and its limitations have not yet been defined, it is clearly the duty and the privilege of the medical profession to formulate and direct its activities. We are admonished that if the medical profession fails to cooperate in its development and assume leadership it will be hoisted upon the profession in ways that will be detrimental to the profession and to the public. Dr. Fishbein, editor The Journal of the American Medical Association, warns the profession that it must give serious consideration to conditions "if we are to accomplish anything in our efforts to direct the trend of public opinion in matters pertaining to the practice of medicine as to whether it is to an individualistic practice of medicine or social medicine".

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**Acknowledgement is given Dr. J. R. Baldwin of Columbus, Ohio, from whose address on State Medicine much material was derived.

Let us admit at the onset of this discussion that medical science and practice are indispensable; that we must have doctors and that the only debatable question is—Shall the doctors and their practices be employed and regulated by the State or shall the doctors remain, as now, a self governing body, with limited governmental supervision and control?

Our forebearers were warned by Dr. Hoffman to "flee from doctors and medicine if you would be safe" and we are admonished in the scriptures to put our trust in the Lord and not in physicians. However justified these admonitions may have been at the time they were given surely the medical profession, with all its marvelous achievements of the past two centuries, has justified its existence. The span of life is increasing and we are enjoying a more abundant life today than ever before and much of the credit should be given the medical profession. We acknowledge our limitations in the prevention and cure of disease and frankly admit that evil doers are within our ranks but with all the sins we are inclined to, we submit that the possibilities for good justifies our existence and challenges the confidence and esteem of the public.

There are those who demand that the doctor be actuated solely by altruistic motives; that the "healing art divine" should never permit itself to be debased by the sordid commercialism of the world. What would a man not give for his life and yet when his life has been saved and all fear and suffering removed, what more natural than for the recipient of these blessings to assume that the satisfaction the doctor must feel in the performance of such worthy deeds should be his sole reward. When the doctor approaches the sick bed he is greeted as a messenger sent from God; when he administers the healing potion he is transformed into an administering angel, but when all suffering vanishes he is regarded as but an ordinary man after all, and finally when the statment is presented for services rendered, low and behold, he is the devil incarnate.

Dr. Baldwin's conception of the true physician is one who has always conducted himself in such a manner that when he gets to heaven and is brought face to face with his former patients, he can meet them with a clear conscience, knowing that at all times he had served them to the limit of his abilities, that while he may have failed he had done his level best, that he was never careless or indifferent to their demands; while not always wise he was never culpably ignorant, that he never made distinction between the rich and the poor, had always sacrificed his personal comfort and pleasures, in their interests, had never presumed to perform a task when there was a more capable doctor available, had never advised an operation or treatment for disease that he would not willingly accept for himself under like circumstances, that his charges for service had always been reasonable, that the good of the public and the profession had actuated his motives at all times and that he had cherished the hope that when he had come to the end of his professional career, the people would rise up and call him blessed and finally that he could truthfully say "I have fought the good fight, I have kept the faith".

Few there are in the medical profession who have lived up to the standards portrayed by Dr. Baldwin, and if all this is demanded of the profession by the public, then we can understand why State Medicine has its advocates. If such standards are required of the medical profession why not of all professions? And if we must have State Medicine, then why not State Law, State Theology, State Architecture and on through the whole category of professional groups?

Let us briefly review the arguments for State Medicine, setting aside all personal bias, and view the question solely from the standpoint of the public's interest. For, after all, that which is for the best interest of the greatest number will ultimately prevail. Let us define State Medicine as a system whereby all doctors are educated under state control and are salaried by the state. They are to be supported through taxation and receive no direct compensation from their patients. It is presumed that since the doctor cannot profit by the misfortunes of his patients he will be actuated by motives that are pure and undefiled. His status would be likened to that of the educator. Medical education would be controlled and directed by the state. Practice would be supervised by the state, salaries would be fixed by the state and in proportion to the responsibilities assumed and skill expended. The doctor would be assigned to definite localities, post-graduate courses would be provided and required, vacations would be granted and there would be pensions for physical disabilities and old age. We would have none of the over crowding of the cities and neglect of the rural communities for the doctors would be allocated in accordance with the needs of the communities. There would be none of the nefarious practice of fee splitting because there would be no fees to split. There would be no unnecessary services performed for reason of financial reward and patients would be referred to the doctor most competent to perform the services rather than to be retained in less competent hands. If all this could be accomplished through State Medicine, then I would say—let us have State Medicine. But can it? Few reforms have ever been carried to a successful issue through governmental control.

It is argued that public school education was once more bitterly opposed than is State Medicine. Governor Burkley of Virginia, in 1675, said:—"I thank God that we have no public schools nor printing presses and I hope that we shall not have ány for a hundred years; for learning has brought disobedience and heresy and sects into the world, and printing has divulged them and libeled governments. God keep us from both!" And now we have public education and it is costing the taxpayers of our nation the tidy sum of not less than two billions of dollars annually. The proponants of State Medicine affirm that it is as much the business of the state to prevent and cure diseases as it is to educate our youth; they argue that free education does not pauperize, neither will free medical service.

Fifty years ago there was little supervision over medical practice. One could practice medicine with less than a high school education and without attending upon lectures and clinics in a medical school. A brief period under the tutelage of a preceptor would suffice and the preceptor may have been an untutored practitioner. There were no health officers, no school physicians or nurses, no visiting nurses, no sanitary inspectors and no organized efforts to educate the public in health problems.

Now we have state control of licensure of doctors, dentists, nurses, veterinarians, barbers, beauty specialists and hair dressers. We have industrial commissions. Every community has its health officers, the state provides for the care and instructions of the deaf, the dumb and the blind; the cripple, the mental defectures and the victims of venereal and contageous diseases are cared for by the state. The government as well as many private organizations are engaged in educating the public in health problems. We have adjusted ourselves to these obligations and they are generally approved by the medical profession and the public. If it is the duty of the state to provide for these exigencies, why, we are asked, should not the state provide for the acutely ill and injured; for the rich and poor alike? The public schools are open to rich and poor alike; police protection is provided and without class distinction. Why not medicine? Formerly the medical profession was solely concerned with the cure of disease, now the prevention of disease is of most vital concern, and is this not the duty of the state? Dr. James Warbasse says—"Modern medicine has been won through the sufferings of countless generations; it is the heritage of all, to be denied to none'', and adds that "socialization of medicine is coming". The Canadian Minister is now preparing a bill for State Medicine. Traveling clinics, at the expense of the government, are supplying medical services to the widely scattered communities in Alberta. The Panel System has long been established in England and is fairly satisfactory to the profession and public. In Germany 40,000 doctors are employed by the government and two-thirds of the German population receive medical services and hospital accommodations from the state. The maximum income of a doctor so employed is $5,000. In the Canal Zone there are no private practitioners, no cults, no quacks to prey upon the credulity of the suffering public, no patent medicine. All is under government control. Preventive medicine has made the Canal Zone one of the healthiest places in the world.

In support of State Medicine it is contended that most advances in medical science are made by salaried men and that this will be increasingly so in future years.

In support of the contention that State Medicine is an economic necessity, it is estimated that there is an annual expenditure in the United States of $700,000,000 for drugs, $2,000,000,000 paid by industries for illness, $6,000,000,000 for lives needlessly lost, $1,200,000,000 for hospital maintenance, $90,000,000 for funerals and only $65,000,000 for public health.

Advocates of State Medicine are wont to refer to the Army and Navy Medical Corps as evidence of governmental efficiency in medical affairs. *A* young man enters the Army or Navy with a salary of $2,696 if single, and $3,152 if married. As Colonel he receives $6,776 if single and $7,200 if married. In addition to his salary he receives subsistance and rental allowance, stable and forage together with $12 a month for the keep of a horse. For travel by land he is allowed eight cents a mile and free transportation by sea. He is granted thirty days leave of absence each year on full pay. Medical books and periodicals are supplied by the government and when engaged in graduate study his tuition is paid and his full salary remains in force. In event of permanent disability he is paid three-fourths of his salary and at death his dependants receive half a years salary. It is contended that under State Medicine, granting that the government would reward the doctors as liberally as it now does the Army and Navy Medical Corps, that the profession would be better compensated than they are now in private practice. The average gross income of general practitioners is said to be $3,000. At least half this amount would be required for professional overhead. It would seem that the average practitioner of medicine would be more liberally provided for under State Medicine. It is the specialists with larger incomes who would suffer under state control. Recently I had the privilege of visiting the Navy Hospital in Norfolk, Virginia. I found the medical staff a competent, enthusiastic group. They were thoroughly abreast with modern medicine and their equipment was excellent. They assured me that there was every encouragement for scientific development and that there were no restrictions upon personal initiative, even among the lowest in rank. Indeed promotion to higher rank depended upon their progress in scientific medicine. In their staff meetings, where scientific subjects are discussed, there is no distinction in rank.

Dr. Bevan, Chairman of the Committee on Medical Education of The American Medical Association, says: "Medicine is rapidly becoming an important function of the state. It will mean state control and state support for public health, for medical licensure, for medical education, for medical research, and to an increasing extent the medical care of the helpless. And when we have educated the people we will have no difficulty in securing the necessary laws, machinery and funds to make medicine a great function of the state".

It is predicted that State Medicine would abolish quackery and secret nostrums and that it would foster research in the cause, prevention and cure of disease, and to a greater degree than is now possible under private direction.

The poor are now receiving from private and state sources all that medical science has to offer. The rich are paying for such service, but it is the great middle class who find it increasingly difficult to obtain that which is now considered essential for the proper study and treatment of their ailments, because of the ever mounting costs. It is the problem of the middle class that is creating the demand for State Medicine. With the ever increasing cost of hospital maintainance it is questionable if the unendowed private hospital can long exist and if that time comes, then the middle class will join the poor in seeking state aid. In the mid-west the average cost to the hospital is $4.50 per day, per bed. In the east it is six to nine dollars and every year brings added costs. This is indeed a heavy tax upon the average income.

The sparcely settled portions of our country are inadequately supplied with doctors and hospitals and it will be the duty of the state to provide facilities for these out-lying districts where the private practitioner could not eke out a living. There will be traveling clinics such as are now to be found in the province of Alberta. One such traveling clinic is now supported and directed by the state of North Carolina for the benifit of rural communities.

Admitting that these arguments in favor of State Medicine sound alluring to the suffering public and that some of them are valid we ask: What of the tax-payer who must provide a sum at least equal to our educational budget—an item in excess of $2,000,000,000? Will medical service be "free" to him?

Medical education is acquired at great expenditure of time, labor and money. Seven to twelve years of such sacrifices are scarcely justified in the prospect of a salaried job such as State Medicine could offer. Admitting that the rank and file of the profession would be better rewarded in State Medicine, there would be little incentive to make the necessary preparation for a distinguished career. Take away individuality and you destroy initiative. State Medicine cannot change human nature though it may change human relationships. Independence in medical practice is as essential to the happiness and prosperity of doctors as is independence in citizenship. Americans will be satisfied with no less. There will always be independent practitioners. In the main they will be the most progressive and competent. State Medicine will attract the weaker element of the profession. Those who are able to pay the price will continue to employ the private practitioner. Those who cannot pay will receive the services of the profession as they now do. While gross abuses have crept into the profession, it cannot be said that the medical profession is lacking in charity. Doctors are committing professional suicide in their zeal for preventive medicine and much has been accomplished to the financial loss to the profession. Medicine is an altruistic calling; it always has been and it always will be. There are unworthy members in its ranks and evil practices are among them, but one black sheep does not lend color to the whole flock. State Medicine is in vogue today to an ever-increasing extent, but to make a universal application of it is impractical and impossible. It has proven so in European countries and it will be less applicable to individualistic America. In a word, it is Paternalism in its purest form; a word that is repugnant to American democracy.

TWO TYPES OF VASCULAR DISTURBANCES OF THE EXTREMITIES*

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I am presenting two different types of vascular disturbances of the extremities, one the obstructive, obliterative or organic, the other the non-obstructive or vaso-motor.

Each is a distinct clinical and pathological entity, the cause of which is not definitely established. The end results in each show a striking similarity.

Mr. F. W., Council Bluffs, Iowa (38), machinist, American, born in Carthage, Illinois, was admitted to St. Joseph's Hospital, March 4, 1929. Referred from the Creighton Dispensary for diagnostic study and treatment.

His family history is not important. He has had influenza, small pox, measles and chicken pox. A tonsilectomy was performed in 1918.

Chief complaint: Sharp shooting pains alternating with dull continuous pains in both feet for the past three years.

CLINICAL HISTORY

The onset was sudden. He awoke one morning with pain in one heel, and a feeling as though it was severely bruised. He could not bear his weight upon the heel for several days. For a year thereafter, at intervals varying from a week to a month, he had similar attacks lasting two or three days, and the pain would alternate one heel to the other. The location was the same in both, i. e., in the plantar surface in the center of the heel.

Two years ago he began to have pain in the toes of both feet in addition to that in the heel. The pain may be in one toe for thirty minutes, then migrate to the tip of another, but never to the other foot. He has never had pain in both feet at the same time.

The pain, when deep-seated, is boring in character and is always accompanied by superficial and extreme tenderness, together with heat and burning. At this time the toes assume a dark red color.

For the past year the pain has been knife-like and shooting from the toes to the heels. He has also noted, what he terms, blood blisters occurring on the tips of the toes; these would break and leave a superficial ulcer requiring three to four months to heal.

His feet have never been swollen but assume a purplish color upon standing and become blanched when elevated. Heat and cold influence the pain. When the limbs feel cold, heat relieves and vice versa. He must sleep with the feet exposed to the air. All his symptoms are worse in cold weather. Change of position and certain movements give relief.

Upon walking four or five blocks he gets a pain and a cramp-like feeling in the feet and calves of the legs (intermittent claudication). After a short rest these are relieved and he is good for a few more blocks.

During the second year after the onset, while working, he experienced the same feelings, sensations and changes in the left hand as in the feet (intermittent claudication). He is left handed and only while working has the left hand given him trouble during the past year. He smokes fifteen cigarettes daily.

While under observation at the hospital his pains have been limited principally to the right foot which has maintained a hyperemic appearance while reclining in bed. At times the great toe was exquisitely sensitive to the slightest touch. Small, very painful, bluish-red slightly indurated areas of migrating phlebitis would appear and disappear on the lower lateral surfaces of the leg and dorsum of the foot. Recently there have been deep-seated, cutting, ripping, paroxysmal pains in the right leg extending from the calf to the heel, while at rest in bed.

General physical examination is essentially negative except for the lower extremities and the left hand.

The circulatory efficiency test shows rubor graded 2 with the feet in the pendent position 0°, and palor graded 3 at 180°. The same phenomenon is seen in the left hand.

There is no pulsation of the left radial artery, all of the other arteries of the upper extremities pulsate normally. In both femoral and both poplitial arteries pulsation is diminished, more noticeably the right.

The right dorsalis pedis and the right posterior tibial arteries cannot be felt nor can the left dorsalis pedis and the left posterior tibial be felt.

A small gangrenous patch of skin is seen on the tip of the right great toe.

The usual laboratory examinations show nothing unusual.

The x-ray examination. Feet—arteries not demonstrable. All toes everted at metatarso-phalangeal joints. No bone destruction.

A diagnosis of thrombo-angiitis obliterans or Buerger's disease is made; well compensated in the left hand and active in both feet.

A diagnosis of Buerger's disease is tenable in the evidence of—

1. Arterial obliteration, left radial and both right and left posterior tibials and dorsalis pedis.
2. Superficial phlebitis.
3. Positive tests of circulatory efficiency.
4. Symptoms of vascular insufficiency, including intermittent claudication of the left hand and both lower extremities.
5. The occurrence of spontaneous, slowly healing trophic ulcers.
6. The absence of demonstrable arterio-sclerosis and diabetes.

Thrombo-angiitis obliterans, according to Buerger, after whom the disease is named, is an inflammatory process involving the deeply situated and larger arteries and veins of the lower and upper extremities. Extensive thrombosis follows, resulting in the partial or complete closure of the vessels over a large area of their distribution. The clinical manifestations are due to the interference with the circulatory conditions of the limbs from the extensive obliterative process. The cardinal symptoms are ischemia, chronic or induced rubor; absence of pulsation in certain peripheral arteries and migrating phlebitis. It is not an endarteritis obliterans.

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*Presented before the Omaha-Douglas County Medical Society.

The disease occurs almost exclusively, 95%, in young or middle aged Polish, Russian or Galician Hebrews. Our patient is not of the Semitic race. Tobacco is thought to be a predisposing factor, probably causing some alterations in the vessels which make them more susceptible.

As to treatment, inasmuch as nothing is definitely known concerning the cause, there is no sovereign remedial agent. 75% of the cases come to amputation.

Mrs. A. J. (68), housewife, born in Denmark, was admitted to St. Joseph's hospital, March 4, 1929, referred from the Creighton Dispensary Clinic.

Her chief complaints were:

1. Inability to swallow, intermittently for past 18 months.

2. Loss of forty pounds body weight in past 18 months.

3. Painful fingers and toes, eleven years' duration.

Her family history is negative and her past history is uneventful.

CLINICAL HISTORY

Eighteen months ago, while eating peas, she suddenly felt a queer sensation in the stomach which caused her to vomit. She describes it as "something lodging under the breast bone." Everything she ate that day caused her to vomit immediately upon swallowing. The following day she was able to eat oatmeal and bread. Thereafter she noticed she was unable to eat coarse foods. The condition became progressively worse, and increasingly difficult for her to swallow solids or fluids. Six weeks ago she was able to take only milk with beaten eggs.

Now she must take soda preceding the milk or she cannot swallow; nor can she retain water without first taking soda. Vomiting, when present, occurs within a few minutes after eating or drinking, and the vomited material is unchanged. At times the stomach will "open" for three or four days and she will then gorge herself.

(We would direct your attention especially to the remaining portion of the history, as it is particularly germane to a vascular disturbance we wish to emphasize. The above history has only an indirect relationship to the vascular condition.)

Eleven years ago, while milking she noticed a numbness, weakness and tingling in the first and second finger of the left hand. This was quickly followed by blanching and both fingers became white as snow. In three or four minutes they assumed the normal color.

During the subsequent few weeks this phenomenon occurred at intervals in all of the fingers. The fingers now began to get painful, dark red in color, and the skin thick and scaly. Sharp pains would radiate from the fingers up the forearm. When painful, the fingers are bluish-red in appearance.

Five years ago the distal joints on each finger became fixed and there was a marked overgrowth of the finger nails. The fingers have been reddish-white and scaly for the past three years. Superficial sores would appear on the fingers and require months in healing. The tip of the first finger of the left hand became black and eventually dropped off. (Gangrene).

Pain and similar changes in the toes of both feet have been noted along with those of the fingers but in a milder degree. Cold and inclement weather causes pain in all the fingers and during the winter she carries a hot-water bottle in her muff.

On examination a mild type of arterio-sclerosis of the palpable vessels is noted. The heart is slightly enlarged and there is a systolic murmur heard over entire precardia. The systolic blood pressure is 170, diastolic 90. The hands are cold and reddish-white in appearance. The color of the skin is but little changed in the hands at an elevation of 180°. Both feet are cyanotic and cold to the touch. The circulatory efficiency test applied to the feet shows incomplete pallor at 180°. There was no reactionary hyperemia of the feet in the pendent position, their previous color returning in one minute. The arteries of the arms and legs are palpable with good pulsation.

The usual laboratory tests are essentially normal save for a slight trace of albumin in the urine.

X-ray; oesophagus—lumen constricted in lower 7.5 cm with smooth dilitation above. (Cardiospasm).

Heart and great vessels normal in size and contour.

Both hands and feet: Polyarthritis both hands involving phalangeal joints. Arteries not demonstrable in hands or feet.

We place this case in the group of vascular disturbances of the non-obliterative type, Raynaud's disease, having a vaso-motor basis.

The diagnosis of Raynaud's disease is tenable,

a. By the history in neuropathic subject of the development of the symptoms.

b. By the circulatory disturbance manifesting itself in the four characteristic stages:

1. Local syncope.
2. Local cyanosis.
3. Active hyperemia.
4. Necrosis and gangrene, and the presence of open arterial paths and pulsations.

Her difficulty in swallowing is due to a cardiospasm of functional origin.

Raynaud's disease, also referred to as symmetrical gangrene, is a vascular disorder *without* organic changes in the vessels. It is *not* dependent upon primary disease of the blood vessels. The pathogenesis of the disease is not definitely known. The vaso-motor control is so deranged by some unknown factor as to cause angiospasm of peripheral vessels. That it is due to disturbances of one or more internal secretions, particularly the thyroid, lacks incontrovertible evidence.

It is a self limited disease and treatment other than a regimen tending to increase the patient's vasomotor stability and resistance is more frequently lacking of beneficial response.

CHEMICAL OBLITERATION OF VARICOSE VEINS

Howard M. Kern and Lewis W. Angle, Baltimore (*Journal A. M. A.,* Aug. 24, 1929), report on the treatment of 104 cases of varicose veins and 148 legs. The majority of patients had varicose veins on the leg and thigh. There were 651 injections given, varying in individual cases from two to twenty-seven. Two patients had been previously operated on; nineteen cases were complicated by ulcer, and six cases were complicated by eczema. Three patients had superficial ulcerations following the use of 20 to 30 per cent sodium chloride solution. These were not due to faulty injections but to subsequent leakage from the puncture wounds in spite of the fact that careful and prolonged pressure was made over the site. In three cases there was an ascending chemical phebitis following the injections of salt solution. There was one recurrence after six weeks. The veins had been obliterated by cohesion of the walls and support was not given. This patient was given injections later, with a good result. There has been no case of infection or embolism. In no case was there failure to obliterate the injected veins. However, two patients with tremendous dilatation of the internal saphenous vein required twenty-five and twenty-seven injections, respectively, and in one very resistant case treatment is not yet completed. The ulcers have healed as if by magic except in two instances in which there had been a recurrence of ulcer formation for fifteen years and the tissues of the leg had undergone such trophic changes that healing was almost impossible except by radical excision and grafting. Although these ulcers have healed, they have been greatly reduced in size. None of the patients lost time from work. The authors are convinced that the injection treatment is the method of choice as opposed to operative treatment, both from the standpoint of danger and also from the standpoint of time lost. There are four contraindications to this treatment: (a) active or latent phlebitis; (b) obstruction to the deep veins; (c) arterial disease of the extremities (Raynaud's disease and thrombo-angiitis), and (d) cardiac disease. Pregnancy, in itself, is not a contraindication, but as the varices are greatly improved after delivery, Kern and Angle believe it is best to wait. A mixture of 50 per cent dextrose and 30 per cent sodium chloride is an ideal solution to use for obliterating the veins. Injections should be made in the horizontal position, if possible. If the internal saphenous vein is varicosed above the knee as well as below, it should be obliterated as high as is necessary to insure a cure of the varices of the leg. There is little or no danger in the treatment if it is done by careful operators with a thorough understanding of vascular conditions.

MODERN METHODS OF TREATMENT OF PULMONARY TUBERCULOSIS

John A. Seivier, Colorado Springs, Colo. (*Journal A. M. A.,* Sept. 28, 1929), states that the modern method of treatment of pulmonary tuberculosis necessarily begins with its prevention. With the compulsory pasteurization of milk now in use in large cities, the careful inspection of dairy herds and elimination of infected cattle, glandular and bone and joint tuberculosis have practically become a thing of the past. In the field of prevention of pulmonary tuberculosis, the work of Calmette today offers hope. His treatment consists in giving to children during the first week of life three oral doses of 0.01 Gm. of B C G culture obtained by attenuating virulent bovine bacilli. The prevention of the disease by removing the infant from contact with tuberculous parents and placing him in wholesome rural environments was the method instituted by Grancher. These experiments successfully proved his contention that tuberculosis is a contagious and not an hereditary disease. Numerous preventoriums and institutions for undernourished children throughout the United States have done much, together with our improved methods of diagnosis, in eradicating the incidence of tuberculosis in children. The same factors of early diagnosis and hospitalization have contributed to make adult tuberculosis less formidable, both to the patient and to his family and friends. General improvement in living conditions has probably had a tremendous effect in reducing morbidity and mortality. All the modern methods of treatment that have attained any marked degree of success have one prime factor in common: rest in general and rest of the diseased lung. The more completely this aim is attained, the more certain and permanent the desired results will be. It mav safely be stated that, of all the methods employed, rest alone in one form or another has stood the test of time.

ALWAYS IN DEMAND

Doctor Cadman compares promiscuous kissing to the licking of salt by cattle. He might have added that the cattle always come back for more. —*Toledo Blade.*

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"WE PERCEIVE THE SHADOW TO HAVE MOVED, BUT DID NOT SEE IT MOVING"

Another calendar year is about to close; another fiscal year of the Nebraska State Medical Association will end with the last of December, and the concluding number of Vol. XIV of *The Nebraska State Medical Journal* is in your hands.

It is but natural to look back over the passing year and ask: What has been accomplished? Was it worth while?

It would take a keen analyst to tabulate the advances made so that "he who runs may read" of the progress made; yet all of us know that progress is being made in all lines of endeavor in which we, as a profession, are concerned.

Rome was not built in a day, but became a city magnificent in proportions and in influence on the world. Medicine is making slow, but steady, progress—sometimes we think, as when Insulin was announced, progress goes by leaps.

Within the memory of men still in active practice antiseptic and aseptic methods were unknown. "Laudable pus" was then taught, it being thought necessary for all wounds to drain in order to heal. Oakum, material used for caulking boats, was then the standard surgical dressing instead of our sterile gauze and sterile cotton. The wounded soldiers of the Civil War were treated by those methods. The germ theory of disease, advanced by Pasteur about three score years ago and now universally accepted, led Sir Joseph Lister to develop a system of antiseptic surgical practice that speedily effected a revolution in the treatment of all surgical affections. This discovery was the step that soon led to aseptic surgery and primary union of wounds.

In 1894, in the Pasteur laboratory, Roux discovered the antitoxin for diphtheria by the use of which the mortality of diphtheria has been reduced from above 50% to less than 10%.

In 1895 Pasteur commenced his inoculations for preventing rabies in the human subject.

The discovery in 1895 by Roentgen, of the properties of the x-ray, revolutionized the diagnosis and treatment of disease.

The discovery of the causes of typhoid and yellow fever and their prevention by sanitation was made coincident with the Spanish-American War.

The White Plague has within recent years been taken from the catalogue of the scourge of the ages to one of the curable diseases by the discovery that absolute rest in bed during the active stage, fresh air and forced feeding of highly nutritious foods, will arrest and possibly cure most cases.

Appendicitis, up to the nineties of the last century the *bete noir* of the family physician under the name of inflammation of the bowels, is now cured by a simple operation.

Fifty years ago there was hardly any laboratory work taught in medical schools; today obscure disease may be checked up from almost every angle by laboratory methods.

Bone grafting and bone transplantation developed mostly since the turn of the century, has made possible restoration of the human frame wrecked in war and in the mechanic arts.

And yet many more!

The Nebraska State Medical Association as one of the units of organized medicine in this country has done its part in fostering modern medicine on a high plane. As the Church is a moral influence for the better things of life, so Organized Medicine is an influence for the better things in medicine. We may not, in everyday life, always realize this to be true, but the fact remains.

The Nebraska State Medical Journal is your organ of cohesion and expression. The Nebras-

Holiday Greeting

"Now is the season of giving,
Now is the end of the year--
Days will be longer,
Hearts will be stronger;
New Year is coming and Christmas is here.

Bring in the Yule log and place it--
Wreath it with radiant flame.
The Year's at the turning
So let it stay burning;
The spirit of Christmas is more than a name.

We'll brighten the windows with holly,
With mistletoe ambush the door;
Let joyous distraction
Disarm every action;
Spread cake on the table and toys on the floor."

ka medical profession of today is the equal of any in other states and 90% of the original material published in your *Journal* is scientifically pure. The editorial section is conducted with the utmost effort to make it worthy of a great profession. Whatever shortcomings there may be, should not be charged to want of effort.

And so, while we perceived the shadow to have moved, but did not see it moving, may each of us do his part to shed light on the unsolved problems of medicine and of the professional relations, and may the public whom we serve accord us due recognition for our ceaseless efforts to lessen suffering and wipe out disease.

SOME DATA ON MEDICAL FACILITIES IN UNITED STATES

The Committee on the Cost of Medical Care has issued "A Survey of Statistical Data on Medical Facilities in the United States" from which the following facts are obtained:

Perhaps the outstanding fact regarding medical facilities in the United States is that there are approximately 1,500,000 persons estimated to be employed in connection with the care and prevention of illness. This includes physicians of all types, dentists, nurses, hospital superintendents and personnel, pharmacists, laboratory personnel, etc.

There are in the United States more physicians per 100,000 people than in any other country in the world. The number of doctors has not increased as fast as the population, but it does not follow necessarily that there is an inadequate supply. Improved transportation, the growth of office practice and many other changes may have more than counterbalanced the decreased ratio of physicians to population. The sufficiency of physicians is affected by their geographical distribution. In South Carolina and Montana two years ago there were 71 physicians to every 100,000 people, while California had 200. The survey shows cities relatively oversupplied whereas smaller communities are relatively undersupplied. Over 19,000 doctors limit their practice to a special field in medicine and 20,000 others practice a specialty but do not limit themselves to it. At least 11% of doctors are employed on a full time salary.

Hospital beds have increased from 421,000 in 1909 to 890,000 in 1928. There are 7,000 hospitals in the United States and the daily average of patients is about 700,000. Over 40% of counties in the United States have no hospitals for general community use. The general, state and local governments provide considerably more than one-half of the hospital facilities. Clinics have increased from 600 in 1910 to 6,000 in 1926.

THE DOCTOR THE FAMILY'S BEST FRIEND

In connection with a health campaign being featured by the Five County Medical Societies of New York City, Mayor Walker issued a proclamation calling attention to the work and endorsing the same and at a meeting of the representatives of the societies he gave an extemporaneous address as follows:

"The Proclamation is the best indication of the Mayor's sentiments on the matter. I do not mind saying to you—though it is none of my business—as one who knows something about sickness from the visiting side, I look upon it as an unfortunate thing that a great many of our people are getting away from the family physician. There is no question but this is the day, the era of the specialist; but as one who has known considerable sickness, I am still convinced that the cornerstone of health is the family physician, and it is to the family physician that the family should apply, in my opinion, for the specialist that is necessary and required. No one knows any of us like our family physician, and it is a fact—it was an old-fashioned method—that the family physician was the family adviser and the family friend. He knew the constitution, he knew the predisposition, he knew the tendencies of the individual in many cases from the cradle into manhood or womanhood. No one has the same interest in any of us as the family physician, and it is my opinion that we might all do well, when seeking the advice and the service of specialists, to acquire it through the family physician, the old-fashioned friend who could always be found when the family was in trouble. I would like to see it revived, or I would like to see the disposition to get away from the family physician arrested. Even though we appreciate and recognize the necessity of the specialist, even though we know the value of the specialist, he ought to come back—the old-fashioned and best friend the family ever had, the family physician".

THE OCTOBER CLINICAL CONGRESS IN CHICAGO

The recent Clinical Congress and Convocation of the College of Surgeons held in Chicago,—its birthplace and home—last month, was well attended by many of the most outstanding surgeons of this country and many from abroad; among whom many received honorary fellowships. There were nearly seven hundred altogether admitted to membership, largely from the United States and Canada. Many foreign countries are now represented in its membership.

The attendance was large, the clinics were sought with avidity and all were well attended. In some, the capacity of the clinic rooms were inadequate. The general conferences, meetings and lectures were somewhat handicapped by the simultaneous conduct of clinics.

The growth of the College has been constant and its objects and aims have become fully established—namely: higher ethical and scientific standards in the practice of individual surgeons and uniform minimum standards in the conduct of hospitals. These reforms and betterments have come slowly after the melting away of persistent opposition until the majority of hospitals unstandardized are clamorous to qualify for the coveted distinction.

The interest in industrial surgery was noteworthy and this department of the College's activities is outstanding in this field as developed by its standing fracture committee and the general interest is manifest in the large attendance at the conferences and clinics.

The American College of Surgeons had made for itself a leading and honored place in the history, the science and art, the teaching, the ethics, achievements and dignity of surgery, and is to this country what the Royal College of Surgeons is to Great Britain.

Fellowships were granted to the following Nebraskans: Dr. Nora May Fairchield, Omaha; Dr. Frederick G. Kolouch, Schuyler; Dr. Arthur L. Miller, Kimball; Dr. George Benjamin Potter, Omaha; Dr. Philip L. Romonek, Omaha; Dr. James Walter Thomas, Lincoln.

Dr. J. P. Lord, Omaha, was named a member of the Board of Governors.

The Pictorial Review announces that the annual Achievement Award given to the woman who has made the most distinctive contribution to the field of American art, science or letters, was this year awarded to Dr. Florence Rena Sabin, fellow of Johns Hopkins University, and member of the staff of the Rockefeller Institute for Medical Research. Dr. Sabin was the first woman to be admitted and to graduate from Johns Hopkins Medical School.

DR. SANFORD GIFFORD GOES TO NORTHWESTERN MEDICAL SCHOOL

Dr. Sanford Gifford, Omaha ophthalmologist, has been called to the head of the Department of Ophthalmology, Northwestern University Medical School, Chicago, and assumes his duties with the beginning of the new year.

Doctor Sanford (as we like to call him) has been so much a part of Nebraska medicine the past decade that we regret to lose him; but the greater opportunities for research and teaching which have always appealed to him, were irresistable. The good wishes of the Nebraska profession follow him to his new and greater work.

DR. SANFORD GIFFORD

Sanford R. Gifford was born in Omaha, January 10, 1892, son of Dr. and Mrs. Harold Gifford; graduated from Cornell University, A. B., 1913; University of Nebraska College of Medicine, M. D., 1918; was an officer in the medical corps of the army in the World War in France, 1918-1919; instructor in ophthalmology, Nebraska University, College of Medicine; on staffs of Methodist and Clarkson hospitals, Omaha; pursued postgraduate studies on the eye some years ago at Rush Medical College, Rockefeller Institute and in eye clinics of Paris, Vienna, Freiburg and London, and has recently returned from further European study.

A TWENTY-FIFTH BIRTHDAY

We do not consider a person very old on his twenty-fifth birthday. On the contrary he is supposed to be just starting out in life—his childhood, adolescence and youth have now passed and he is about to reap the advantages of those habit forming and character training years. At twenty-five he has reached man's estate with a future before him.

In considering the twenty-fifth birthday of one of our oldest organized health movements, however, we are inclined to feel that a decade has been a long period of time. The National Tuberculosis Association which was founded in 1904 and this year celebrates its twenty-fifth birthday has crowded these years so full of accomplishment that we are inclined, and rightly, too, to regard it as a grandfather among organizations.

When the National Tuberculosis Association was formed, there was only one other non-official health agency of a national character in the entire United States, the American Public Health Association, which was organized in 1872. It had no operating program, however, and its energies were devoted largely to the publication of a magazine and the conduct of an annual meeting. Thus the National Tuberculosis Association became the first organized health promotion agency of a non-official character in the country, with a nation-wide scope and program, and has served as a model for many of the other specialized public health movements.

Laymen, as well as physicians, were included in its membership from the beginning and its purpose to help the country both economically as well as socially in combating the scourge of tuberculosis has been manifested in many more ways than in the chief outwardly-seen one, namely the greatly reduced death-rate.

For twenty-five years the National Tuberculosis Association has been a leader in organized education of the public in the way of health. By emphasizing the need for rest, fresh air, food, cleanliness, sanitary living and working places, freedom from fatigue in various occupations as well as the need of suitable institutions for incipient and advanced cases of tuberculosis, this association has made its greatest contribution. It has made the public health-conscious.

In looking back over the twenty-five years these are some of the actual results they have helped to bring about. In 1904 there were 115 sanatoria in the United States with an aggregate bed capacity of 9,107. On January 1, 1929, there were 618 tuberculosis hospitals and sanatoria with a combined capacity of 73,695 beds. There were no tuberculosis dispensaries or clinics in 1904. In 1928 there were 3,671 . The first open-air school was established in Providence, Rhode Island, in 1908 and now there are at least 1,000 schools for children from tuberculosis homes or who are sub-standard in health. There were not more than ten public health nurses who devoted a definite part of their time to tuberculosis work twenty-five years ago. Now there are 7,115. There are eighty-three preventoria for children. In 1904 there were in existence twenty tuberculosis associations of which number only eight had money or active programs. Now there is a state association in every state and there are local associations in the larger cities and counties numbering 1,454.

The association was founded for the *study* as well as for the prevention of tuberculosis and research work has been carried on from the beginning. In 1920 a formal Committee on Medical Research was organized and the influence of its coordinated studies and discoveries has already been marked.

These are briefly a few of the visible accomplishments of this twenty-five year old movement. In supporting its work through buying Christmas seals the funds of which are used to carry on the campaign it is well to remember that twenty-five years is a comparatively short time and that there is much more to be done. There are still over 500,000 living cases of tuberculosis in this country and in 1928 there were 93,000 deaths. There are far too many patients being admitted to sanatoria in the late instead of early stages of the disease. Although we can rejoice that the death-rate has been cut in half, yet in the age period 15 to 45 tuberculosis still takes more lives than any other disease. Here is the prime productive group of our nation, with one out of every five deaths occurring then caused by tuberculosis!

There can be no feeling of self-satisfied complacency on this twenty-fifth birthday. Rather should there be a renewed ambition to go forward. Armed with maturer experience, it will be the aim to reach that goal when tuberculosis shall be reduced to a comparative minimum.

—Elizabeth Cole, National Tuberculosis Assn.

PROTECTIVE VALUE OF CERTAIN SPECIAL TYPES OF SPECTACLE GLASS

It is evident, asserts James M. Patton, Omaha (*Journal A. M. A.,* Oct. 19, 1929), that a laminated glass affords the maximum of ocular protection. When glasses are prescribed for younger children or for persons engaged in occupations with a high eye hazard and for all persons with but one useful eye, no matter what the age or occupation, it is advisable that this type should be prescribed. However, the tempered glass is much superior in protective value to ordinary optical glass and except for its tendency to splinter into sharp fragments is very acceptable. In spite of the fact that the laminating substance now in use is not absolutely free from slight imperfection, the high degree of protection afforded more than make up for this defect. A decided improvement in the quality of the laminating substance is noticeable, and it is likely that a perfectly satisfactory binder will soon be produced. No matter what type of lens is selected, it must be mounted in a comfortable, good-looking frame, if constant wear is to be expected.

THE GRIM REAPER

During the summer while we were enjoying vacation, final summons came to several of our old friends of the Missouri Medical Society. Dr. H. B. Jennings and Dr. Frank T. Seybert of Council Bluffs, also Dr. John M. Mayhew of Lincoln, have responded to the call. We recall these doctors as leading lights in the society; in the days when men read papers, discussed them, exchanged experiences: in the days when personality, individuality, close friendships counted; in the days when we met as much for the warm handshake and the genial smile as for the program. These names recall the days when the Missouri Valley was a body of genial warm-hearted chums, before its conversion into a busy hurry up post graduate course where personality counts little. May they rest in peace.—Bell, J. M., in *Medical Herald.*

EDITORIAL PARAGRAPHS

One of every three diabetic patients develops conditions requiring surgical care.

Some people know too much about things they, as a matter of fact, know nothing about.

The International Congress of Physiotherapy is called to meet at Liege, Belgium, September 4-8, 1930.

The copper cent was first minted by the United States in 1793, and is said to have been the first money coined by any country.

Earthworms longer than a man and an inch in diameter are reported by the magazine, *Nature,* from southeastern Australia.

The Fourteenth Annual Clinical Session of the American College of Physicians will be held at Minneapolis, February 10-14, 1930.

The Bulletin of the Lancaster County Medical Society has appeared. It looks promising and should be a great help to the profession of Lancaster county.

It may be unkind in this holiday month of good cheer to remind you that the dues for 1930 are payable the first of the new year, but our duty is plain!

Studies made by Schultz and Zeigler (*J. A. M. A.*, Nov. 9, '29), indicate that irradiated farina as purchased in the open market does not cure rickets in rats.

California has had a sterilization law for 20 years, and over 6,200 patients have been sterilized under the law—more than in all the rest of the United States together.

It is worthy of note that Dr. Nora May Fairchild, Omaha oculist, was given a Fellowship in the American College of Surgeons at the Chicago convocation in October.

We aim to publish a Roster of Membership every two years and to the Roster published in this issue we have added the List of Auxiliary Membership, as a courtesy to that organization.

It is reported that there are about three million blind people in the world, about 100,000 in the United States. Nebraska's blind population is smaller in proportion to the total than that of any other state.

Some of our medical friends have formed a company to prospect for oil in the Republican valley. Reminds one of Brick Pomeroy who said so many of his friends went to Oil City, he went "oilso". We may wish we had.

The Nebraska Medical Society, the immediate predecessor of the present Nebraska State Medical Association and into which it was merged by reorganization was organized in Omaha in 1856, eleven years before Nebraska became a state.

The Nebraska Association of Medical Women held a meeting in Omaha, November 2. Thirty women physicians were in attendance. Papers were read by Dr. Emma Ackerman, Sioux City; Dr. Ruth Warner, Lincoln; Dr. Carrie Bowman, Loup City; Dr. Loetta Bowles and Dr. Emelia Brandt, Omaha. Dr. Delia Lynch, Omaha, reported on the national meeting at Portland.

Here is a fair example of how the laity misunderstands: A girl developed post-diphtheritic paralysis. The first physician had administered antitoxin. Following the development of the paralysis a second physician was consulted who is reported to have said the paralysis was a result of the diphtheria toxin. The mother always blamed the first doctor for giving the girl diphtheria "toxin" as she called it.

With the closing of the year it is interesting to note that three members of the Nebraska State Medical Association have published medical works during the year: Dr. H. M. McClanahan, "Pediatrics for the General Practitioner"; Dr. H. W. Orr, "Osteomyelitis and Compound Fractures"; and Dr. D. T. Quigley, "The Conquest of Cancer by Radium and Other Methods". Truly, Nebraska medicine is coming to the front.

The Committee of Revision of the Pharmacopea of the United States has issued a Questionnaire to the profession requesting information on the use by individuals of certain officinal preparations with the object of arriving at a conclusion as to the need for certain articles listed in the previous editions. It is hoped that all those receiving copies of this Questionaire will take pains to fill it in and return it to the Committee of Revision.

Indicating the interest there is in study in foreign countries and particularly in Vienna as a medical center the following list of Nebraskans registered at the A. M. A. of Vienna, November 1st, is presented: Dr. Russel Best and family, Omaha; Dr. Hawes and family, Omaha; Dr. J. P. Rigg, Hastings; Dr. D. H. Morgan and family, McCook; Dr. G. F. Zarbaugh, and wife, Dalton; Dr. E. G. Zimmerer, Lincoln, and Dr. K. S. J. Hohlen, Lincoln.

The Eighth Annual Meeting of the American College of Physical Therapy in Chicago the early part of November was an event of extraordinary importance. Nebraska was represented on the program by Drs. A. F. Tyler, Roy W. Fouts and Victor E. Levine, the latter with a paper "Physical Therapy in the Regulation of Acid-Base Equilibrium". Dr. Roy Fouts, Omaha, was elected president-elect and will assume duties at the 1930 meeting to be held at St. Louis.

Before the Nebraska Conference for Social Work, at Lincoln, November 4, Dr. C. C. Carstens, Executive Director of the Child Welfare League of America, deprecated the multiplicity of church orphanages often built in competition, deprecated the child welfare movements sponsored by organizations for self aggrandizement rather than the good of the child, and asserted the greatest need in the child welfare movement to be a diagnostic clinic to study the needs of the child that becomes a public charge.

Turtle vaccine therapy for tuberculosis introduced by Friedmann of Germany and widely heralded in this country about 16 years ago and shortly discredited, seems not to be entirely dead. At the meeting of the Tuberculosis Association at Cambridge, England, Nagelschmidt stated that in Hungary 15,000 cases have been inoculated with turtle vaccine with a resultant lowering of the death rate from tuberculosis of 60%, says the *Journal of the Kansas Medical Society*, quoting from the *London Lancet* of July 6, 1929.

Dr. Olga Stastny, Omaha, who was elected President of the Woman's National Medical Association at Portland in July, has recently been named health chairman of the National Federation of Business and Professional Women's Clubs. Through her reconstruction work in France and Czecho-Slovakia following the World War and her work as Medical Director on Macronissi island in the Mediterranean, to which 12,000 refugees of the Smyrna disaster were sent and over whom she had charge for five months, Dr. Stastny has become one of the most notable medical women of the country.

A medical friend who philosophizes on medical economics sent us the following terse editorial: Wanted: A leader to merge a variety of big and little institutions, which have big and little financial and intellectual assets and liabilities, into an efficient national medical institution. Requirements: Applicant must be able to orient the position of modern medicine in national affairs; must know the purpose and objective of medicine, how to accomplish this purpose and objective and be able to enlist the forces necessary to accomplish the purpose and objective.

The *Medical Mentor* (New York City) is a new journal aspiring to a place in the sun. It is not strictly a medical journal, but a medical editor's and medical author's journal. The first number contains 94 reading pages—and we like it. It contains articles on the problems and responsibilities of the medical editor; the function of an independent medical journal; the role of the state medical journal; the special difficulties of the medical publisher; some personal problems of the medical writer; two opposing views of medical ethics. Sections will be devoted to a History of Medical Journals; a Legal Department; Talks Between Doctor and Layman; Who's Who in the Association; Hobbies of Medical Men; Medical Library Section, etc.

AMERICAN PHARMACEUTICAL MANUFACTURER'S ASSOCIATION

"Keep Well—Consult Your Family Physician" is the slogan proposed as a part of the advertising campaign to be fostered by the American Pharmaceutical Manufacturers' Association in the coming year. Definate action on the nature of this campaign as well as action on the future research program of the Association will be taken at the semi-annual meeting to be held in the Hotel Washington, Washington, D. C., December 16 and 17, 1929.

The meeting to be held on the first day will be given over largely to problems of executive nature and a general discussion of means and ways of obtaining greater efficiency and economy in distribution.

The second day will be devoted primarily to meeting members of the various government bureaus and departments with which the members of the association come in contact in the course of their daily activities.

A visit to the Food, Drug and Insecticide Administration, Department of Agriculture and to the Prohibition and Narcotic Divisions of the Treasury Department will occupy the forenoon of December 17th.

At the luncheon on this day, Senator George H. Moses, of New Hampshire, president pro-tempore of the United States Senate, will be the guest of honor and will address the members. The afternoon will be devoted to addresses by other government officials and reading and discussion of the reports of the Research Board and the Contact Committee of the association.

Among the important topics to be discussed in the executive sessions are Publicity, The Proposed Census of Dispensing Physicians, Institutional Advertising and the "Consult Your Family Physician" campaign.

The officers of the association are:

President: H. Sheridan Baketel, M. D., Jersey City, N. J.

Vice Presidents: Henry Osterman, Seymour, Ind.; E. P. Crowe, Philadelphia, Pa.

Secretary: John G. Searle, Chicago, Ill.

Treasurer: Frank A. Mallett, Des Moines, Iowa.

THE SOCIETIES

A regular meeting of the **Lancaster County Medical Society** was held October 15, in the Sharp Building, with Dr. R. L. Smith presiding.

Dr. W. C. Becker showed a boy of nine years, born with a face presentation, who four years ago developed a spastic left hemiplegia and epilepsy, both of which conditions are becoming progressively worse. He was shown in illustration of the first paper of the evening, and the question was raised by Dr. Rider whether his condition was due to birth injury.

The first paper of the evening, "The Cause and Prevention of Intracranial Birth Injury" was read by Dr. Becker. He gave as the chief causes of intracranial birth injury abnormal presentations, holding back the head, breech presentations and the indiscriminate use of pituitrin. A series of lantern slides of the dural structures, served to illustrate accurately the common sites of tears of the falx and tentorium. The use of coagulant was mentioned as the most useful treatment after difficult labors. The paper was discussed by Dr. Mueller, Walker, I. C. Munger, Jr., Wegner, Covey, Wiedman, Colburn, A. D. Munger, and Becker.

The second paper of the evening, "Clinical Observations on Appendicitis", was read by Dr. A. I. McKinnon. He stressed particularly the importance of diagnosis of appendicitis when the appendix does not lie in its usual position and the symptoms are not classical. He cited cases in which the appendix was found ruptured when lying in relation to the liver, in the pelvis, and on the left side of the abdomen, urging that all physicians think of an aberrent appendix when abdominal symptoms arise. The paper was discussed by Drs. A. D. Munger, McCarthy and McKinnon.

Dr. A. D. Munger stated that he had invited the Southwestern Section of the American Urological Association to come to Lincoln as guests of the Lancaster County Medical Society, and apoligized for not having had official privilege. It was moved and carried that the society go on record as commending this action and do everything in its power to assist in the entertainment of that body.

Dr. Bowman warned the members of the society against a morphine addict in the city.

Dr. Hancock submitted a resolution concerning milk supervision for the purpose of provoking discussion and getting some action concerning a proposed program for certified milk. It was discussed by Drs. A. D. Munger, Adams, Bartholomew and Wiedman, and by motion laid on the table for further consideration.

—Roy H. Whitham, Sec.

The **Fourth Councilor District** meeting at Wayne, October 31, was poorly attended owing to bad weather and almost impassible roads. The program as carried out follows:

Dr. J. P. Lord, Omaha, gave an excellent talk on the retention of troublesome fragments and demonstrated his talk with lantern slides and x-ray plates. Dr. John Buis, Pender, and Dr. Walter Benthack, Pierce, each read a very good paper on fractures of the arm. Dr. A. F. O'Donaghue, Sioux City, gave a fine talk on fractures of the lower extremities and illustrated his talk with lantern slides and demonstrated the application of a plaster cast for hip fracture by a moving picture film.

—A. E. Cook.

The **Cedar, Dixon, Dakota, Thurston and Wayne Counties Medical Society**, at a meeting November 7, at Wayne, elected Dr. J. W. King of Hartington, president; Dr. Clark Philips, Dixon, secretary-treasurer. Dr. C. T. Ingham, Wayne, delegate. About fifty doctors and their wives were present at the banquet.

The **Madison Five Counties Medical Society** meeting for October was held at Stanton on the 22. Dinner was served to thirty-four physicians and their wives in the parlors of the Congregational church.

Dr. B. B. Davis, Omaha, spoke on "The Diseased Gallbladder". In the diagnosis of diseased gallbladder he values the history at 70%, the physical examination at 20% and the laboratory tests at 10%. Acute cases are not to be operated unless empyema develops when simple drainage must be employed. A mortality of 17% goes with cholecystectomies for acute cholecystitis.

Dr. H. B. Hamilton, Omaha, spoke on the "Undernourished Older Child". He does not consider the age and weight tables alone a sure indication of undernourishment. Race, heredity and other things must be considered. Over consumption of milk—"a quart a day"—is an error. Breakfast foods often are poorly chosen. None beat, in vitamine content, well cooked graham flour. The fatigued child is often found to be the playmate of older children, with whom he endeavors to keep up and is overworked. Dr. Morris Nielsen, Blair, spoke on "Medical Organization". He sees the great problem of the county society to be the black sheep and his solution of the problem is simple but drastic: Take the black sheep literally by the breeches and cast him out, without undue ceremony.

The **Third Councilor District Medical Society**, at its meeting at Auburn, November 20, had as honor guest, Dr. Roy Fouts, Omaha, recently elected President-elect of the American College of Physical Therapy and presented the following program:

President's Address, "Commercial Aspects of Medicine", Dr. A. P. Fitzsimmons, Tecumseh; "Peptic Ulcers", Dr. Clyde Waddell, Beatrice; "Surgical Complications of Diabetes" (Lantern Slides), Dr. Frank Conlin, Omaha; "Gangrene of the Extremities", Dr. H. R. Miner and Dr. C. L. Husted, Falls City; "Early Diagnosis and Treatment of Poliomyelitis", Dr. Floyd Clarke, Omaha; "A Discussion of Breech Presentation" (With the DeLee Obstetrical Movies), Dr. Elmer M. Hanson, Lincoln; "One Phase of Sinus Infection", Dr. J. C. Tucker, Beatrice.

A six o'clock dinner was a feature of the program.

The pioneer physicians of the county were honored by the **Gage County Medical Society** at its regular meeting Tuesday evening, November 12, when a 6:30 dinner was given "to those physicians who gave their youth to the Young West and guarded the homes of the hardy settlers against the invisible enemy." The dinner was given at the Paddock hotel. Dr. Rush being sponsor of the program.

The physicians now living in the county who were registered as early as 1891 are Dr. I. N. Pickett, class of 1878; Dr. G. L. Roe, 1879; Dr. C. C. Gafford, 1881; Dr. C. A. Bradley, 1881; Dr. J. R. Clausen, 1883; Dr. C. S. Boggs, 1884; Dr. C. P. Fall, 1889; Dr. H. P. McKnight, 1890, and Dr. H. M. Hepperlen, class of 1891.

Dr. E. W. Rowe of Lincoln was the speaker, taking the subject of co-operation in the practice of medicine. He urged doctors to unite in the practice of medicine. He urged doctors to unite in an effort to put the benefits of laboratory aids, proper hospitalization for the sick and modern sanitation within the reach of the purchasing power of the masses. Drs. Pickett, Gafford, Roe, Bradley, Fall and Hepperlen related amusing experiences of the days of the horse and buggy.

About 25 were in attendance. The out-of-town guests were Drs. Gafford and Elias of Wymore, Drs. Pickett and Rice of Odell, Dr. McKnight of Virginia and Dr. Lee of Pickrell.

—Beatrice Sun.

HUMAN INTEREST TALES

Dr. A. A. Blum has located at Shelby.

Dr. F. W. Faulk, formerly of Omaha, has located at Peru.

Dr. Charles S. Boggs, Filley, submitted to an appendectomy recently.

Dr. W. O Bridges, Omaha, is spending the winter at Santa Barbara, California.

Dr. M. H. Carrig has moved from Norfolk to Stuart in association with Dr. F. L. Wilson.

Dr. J. P. Brown, formerly of Stuart, has become associated with Dr. J. P. Gilligan, O'Neill.

Dr. D. J. Wilson, an Ashland product, has become associated with Dr. F. J. Murray, Omaha.

Dr. T. A. Peterson, Holdrege, and Miss Doris Andrews of Chicago, were married October 19.

Dr. Lloyd Myers, Shelby, has sold his equipment and will pursue postgraduate work for a time.

Dr. and Mrs. E. E. Simmons, Omaha, made a trip recently to Seattle and the Canadian Rockies.

Dr. B. M. McIntyre, Wayne, has gone to Rochester, Minn., for clinical work and will remain for some months.

Dr. T. E. Dent, formerly of Omaha, has located at North Platte. He is a son of Dr. Geo. B. Dent of North Platte.

Dr. A. M. Sonneland, Norfolk, gave a lecture recently before the local Woman's club on vaccination and immunization.

A fund of $155,000 has been subscribed in North Platte to build a hospital suited to the size and importance of the place.

Dr. A. E. Gadbois, Norfolk, attended the American Academy of Ophthalmology and Otolaryngology at Atlantic City, the last of October.

Dr. Charles E. Thompson, Detroit, former Omahan, and Miss Mary Vance, Omaha, daughter of Dr. and Mrs. J. H. Vance, were married October 19.

Dr. C. P. Fordyce, Falls City, has been elected president of the Nebraska Writers' guild. He is the author of "Trail Craft" and "Touring Afoot".

Dr. Roy Fouts, Omaha, was elected President-elect of the American College of Physical Therapy at the annual meeting held in Chicago early in November.

Dr. and Mrs. Arthur Kintner, he, a former Nehawka practitioner, now in fellowship at the Mayo clinic, visited friends and relatives lately in Nebraska.

Dr. Sophia E. Warner is now practicing in Holbrook, Nebraska. She recently returned to Nebraska from Minot, North Dakota, where she has been engaged in public health work.

A large residence property has been leased in Wahoo for a hospital to be known as the Community hospital. The local Lions club has sponsored it and the entire profession of Saunders county is helping to push the institution to success.

Dr. C. M. Easton, Davenport, was host to twenty-five guests at dinner at the local hotel in celebration of his eighty-seventh birthday, October 27. Dr. Eastom is not in practice. He graduated at Rush Medical college in 1872. He has gone to Oklahoma to spend the winter.

NECROLOGY

W. H. Britt, Creighton, Nebr.; University of Iowa College of Medicine, 1884; practitioner at Creighton since graduation, with the exception of the first few months at Bazille Mills; died from an apoplectic attack while on the way to make a country call, November 1st, 1929, aged sixty-six years.

R. P. Pierce, Holbrook, Nebr.; University of Louisville School of Medicine, 1895; member Nebraska State Medical Association; practitioner at Ruskin for many years, but for the last few years at Holbrook; died in a hospital at Hastings, on or about October 18, 1929, aged about fifty-eight years.

Charles P. Brenn, Western, Nebr.; Chicago College of Medicine and Surgery, 1906; member Nebraska State Medical Association; practitioner at Western for 22 years; died from a self inflicted shotgun wound, presumably due to insomnia from which he suffered, aged forty-six years.

As The Journal is being made up we learn of the death of **Dr. H. M. McClanahan**, of Omaha. Obituary will follow next month.

BOOKS RECEIVED

DISEASES OF THE BLOOD, by Paul W. Clough, M. D., Associate in Clinical Medicine—John Hopkins University. Cloth, 8 mo., 310 pages. Price $2.50. Harper Bros. Publishers, 1929.

TREATMENT OF DIABETES MELLITUS WITH HIGHER CARBOHYDRATE DIETS, by William David Sansum, M. S., M. D., F. A. C. P., Percival Allen Gray, Ph. D., M. D., Ruth Bowden, B. S. Cloth, 8 mo., 309 pages. Price $2.50. Harper Bros. Publishers, 1929.

PETTIBONE'S TEXTBOOK OF PHYSIOLOGICAL CHEMISTRY, by J. F. McClendon, Ph. D., Professor of Physiological Chemistry, Medical School, University of Minnesota, Minn. Cloth, 18 mo., 368 pages Price $3.75. The C. V. Mosby Co., 1929.

AN INTRODUCTION TO THE STUDY OF HUMAN ANATOMY, by R. J. Terry, A. B., M. D., Professor of Anatomy, Washington University, St. Louis. Cloth, 8 mo., 346 pages. Price $3.50. The MacMillan Co., 1929.

MODERN METHODS OF TREATMENT, by Logan Clendening, M. D., Professor of Clinical Medicine, Lecturer on Therapeutics, Medical Department of the University of Kansas; Attending Physician, Kansas City General Hospital; Physician to St. Luke's Hospital, Kansas City, Missouri. Cloth, 16 mo., 815 pages. Price $10.00. The C. V. Mosby Co., 1929.

MEDICAL RECORD VISITING LIST, Wm. Wood & Co., New York. Price $2.00.

STOP KICKIN'

Now there ain't no use to worry and there ain't no use to fret
'Cause the things that you've been wantin' haven't happened to you yet.
There's no use to be complainin' and be always in a stew,
'Cause the other feller's gettin' what you think belongs to you.

Why life's things is distri-but-ed in the funny way they is
Is away past my explainin' and it's really not my biz
For the one who distri-butes them, they all say is mighty wise,
And knows just what He's adoin' tho he does live in the skies.

So 'twill be a durn site better not to grumble and complain
'Cause we wanted pleasant weather and instid we got the rain.
Rain was needed by some feller fur his crops and fur his hay
They'd dried up, and he'd been busted, if we'd had our bloomin' way.

A much better plan is this one—be contented all the while—
Work your durndest while you're workin'—always have a happy smile.
You'll be gettin' all you're wantin' if you want it hard enuff
Other ways of livin's lonesome—and the roads is mighty ruff.

S. M. F.

"Not drunk is he who from the floor
Can rise again or drink once more:
But drunk is he who prostrate lies
And cannot either drink or rise."

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JAN 7 1929
PHILADELPHIA

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, January, 1929 No. 1

Remember! *when treating stubborn coughs you have available*

Calcreose

CALCREOSE offers the full expectorant action of creosote in a form agreeable to the patient.

Each 4 gr. tablet contains 2 grs. of creosote combined with calcium hydroxide.

Meeting the demand for a cough syrup containing *Calcreose* is the new COMPOUND SYRUP OF CALCREOSE . . . a tasty, effective remedy for minor respiratory affections.

Each fluid ounce represents Calcreose Solution, 160 minims (equivalent to 10 minims of pure creosote); Alcohol, 24 minims; Chloroform, approximately 3 minims; Wild Cherry Bark, 20 grains; Peppermint, Aromatics and Syrup q.s. *Samples of Tablets and Syrup to Physicians on Request.*

MALTBIE CHEMICAL COMPANY
NEWARK, N.J.

A Suggestion to Professional Men

PROFESSIONAL men know that only years of training qualify one for his profession, and also that years of experience are necessary to produce good business judgment.

Your accumulation of years should be entrusted only to experienced hands.

The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY
Farnam at Seventeenth

PARKE, DAVIS AND COMPANY

Every Diphtheria Case
Should Recover

If diagnosed EARLY
and if enough Diphtheria Antitoxin is used

FREQUENTLY the physician is not called until dangerously late. Then, especially, a most dependable Diphtheria Antitoxin is required and repeated injections may even be needed.

Under such circumstances select Diphtheria Antitoxin, P. D. & Co. It is highly concentrated and purified; limpid and water-clear, with a minimum content of protein substances. The syringe contains 40% more antitoxin units than the label calls for. This provides for possible lessening of activity with lapse of time, assuring full label dosage up to the date stamped on the package.

Diphtheria Antitoxin, P. D. & Co., is supplied in syringe packages of latest improved type, ready for instant use.

1,000 UNITS · 3,000 UNITS · 5,000 UNITS
10,000 UNITS · 20,000 UNITS

PARKE, DAVIS & COMPANY
U. S. License No. 1 for the Manufacture of Biological Products
DETROIT, MICHIGAN

DIPHTHERIA ANTITOXIN, P. D. & CO., IS INCLUDED IN N. N. R. BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION

AMMONIACAL URINE

> "As the case improves, dextri-maltose may be substituted for the malt extract so that the final formula reached will contain dextri-maltose as the carbohydrate."

MEAD'S DEXTRI-MALTOSE

From Text Books of over a decade

QUITE apart from the local therapy and care of diapers in the control of cases of ammoniacal urine is the question of diet. Diet is an important matter.

The etiology, in the majority of these cases, indicates an intolerance for milk fat. High fat feedings result in an excess of volatile fatty acids in the stomach and intestines and a condition of "acidosis" prevails.

Constipation is a marked symptom. Hard, dry, crumbly stools of grey color can be shaken from the diaper without leaving stains; fat indigestion consisting chiefly of insoluble soaps.

Dietary treatment consists in the reduction of fats to the infant's tolerance and the increased addition of carbohydrates to restore the caloric value of the food.

Mead's Dextri-Maltose No. 3 is the indication, first, because of its easy assimilation and second, because it contains an alkali in the form of a 3% addition of potassium bicarbonate to aid in overcoming the constipation.

THE MEAD POLICY

Mead's infant diet materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & COMPANY

EVANSVILLE, INDIANA

The peep-holes of a mask restrict vision to a narrow area because of their narrow angle of view.

Ordinary lenses are like a mask because you receive accurate images only in the center.

Orthogons unmask your eyes by giving perfect vision to the extreme margins of the lenses.

UNMASK
YOUR PATIENTS

WHEN your patients are fitted with ordinary lenses they are, in a measure, masked. Clear and strain-free vision is possible only through a small portion near the center of each lens.

Practitioners have known that marginal astigmatic errors could be eliminated, but such lenses as would accomplish this have hitherto been available only with considerable loss of time and consequent annoyance.

Now in the ORTHOGON series, we have fully corrected lenses which may be obtained on prescription orders with the same service as ordinary lenses. Now you can prescribe lenses which completely translate your findings and give your patients precise correction over the entire vision range.

Unmask your patients with ORTHOGON lenses!

Riggs Optical Company

- *Quality Optical Products* -

Appleton, Wisconsin
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Fond Du Lac, Wisconsin
Fort Dodge, Iowa
Fresno, California
Galesburg, Illinois
Grand Island, Nebraska
Great Falls, Montana
Green Bay, Wisconsin
Hastings, Nebraska
Iowa City, Iowa
Kansas City, Missouri
Lincoln, Nebraska
Madison, Wisconsin
Mankato, Minnesota
Medford, Oregon
Minneapolis, Minn.
Minot, North Dakota
Oakland, California
Ogden, Utah
Oklahoma City, Okla.
Omaha, Nebraska
Pittsburg, Kansas
Pocatello, Idaho
Portland, Oregon
Pueblo, Colorado
Quincy, Illinois
Reno, Nevada
Rockford, Illinois
Salem, Oregon
Salt Lake City, Utah
Salina, Kansas
San Francisco, Calif.
Seattle, Washington
Sioux City, Iowa
Sioux Falls, So. Dakota
Spokane, Washington
St. Louis, Missouri
St. Paul, Minnesota
Tacoma, Washington
Walla Walla, Wash.
Waterloo, Iowa
Wichita, Kansas

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, February, 1929 No. 2

in Influenza

CLINICAL experience during influenza epidemics demonstrated the value of Calcreose in this disease and its pulmonary and intestinal complications.

Persistent coughs and bronchitis are particularly amenable to Calcreose.

The MALTBIE Chemical Company
Pharmaceutical Chemists
NEWARK, NEW JERSEY

Tablets Calcreose 4 grs.
Each Tablet Calcreose 4 grains contains 2 grains pure creosote combined with hydrated calcium oxide The full expectorant action of creosote is provided in a form which patients will tolerate.

COMPOUND
SYRUP OF CALCREOSE

Also available . . Compound Syrup of Calcreose, Maltbie, for the lesser ailments of the respiratory tract . a tasty, effective cough syrup that does not nauseate . each fluid ounce representing Calcreose Solution, 160 minims (equivalent to 10 minims of pure creosote); Alcohol, 24 minims, Chloroform, approximately 3 minims, Wild Cherry Bark, 20 grains; Peppermint, Aromatics and Syrup q s

Liberal samples of tablets + syrup to physicians on request

CALCREOSE
MALTBIE

A Suggestion to Professional Men

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Your accumulation of years should be entrusted only to experienced hands.

The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY
Farnam at Seventeenth

The colloidal ability of KNOX SPARKLING GELATINE is valuable in infant feeding

* * *

Drs. Alexander, Bogue, Downey and others have established the colloid-chemical power of gelatine. It has been proved that gelatinated milk is more readily digested and absorbed. Many physicians and institutions have adopted it for certain specialized diets of infants. It increases the available nourishment of the milk mixture. By reducing the formation of large curds, it helps overcome regurgitation and vomiting. It is indicated where infants have colic or excessive gas formation, curdy stools, diarrhea or constipation.

Knox Sparkling Gelatine is an important adjuvant in many special diets. In diabetic cases, it imparts satiety to the patient's appetite, and adds valuable protein content to the menu. In the regimen of invalids and convalescents, Knox Sparkling Gelatine varies the monotony of the diet with dozens of dainty appetizing dishes. Knox Sparkling Gelatine is a pure protein, unbleached, unflavored, unsweetened.

QUALITY WITH ECONOMY

Knox Sparkling Gelatine is the highest quality for health. It is a protein in its purest form, particularly suitable where carbohydrates and acids must be avoided. When you purchase Knox Gelatine you not only get quality but economy, for each package makes four different desserts or salads of 6 generous servings each.

Send for valuable booklets on dietetics

Leading dietitians have prepared the booklets listed below. They contain much valuable information on the medical value of Knox Sparkling Gelatine, together with tempting recipes for the various prescribed diets. Surgeons, doctors, dietitians and members of hospital staffs will find them useful for reference. Check those which interest you and mail us the coupon.

KNOX GELATINE LABORATORIES,
429 Knox Avenue, Johnstown, N. Y.

Please send me, without obligation or expense, the booklets which I have marked. Also register my name for future reports on clinical gelatine tests as they are issued.

( ) Diet in the Treatment of Diabetes.
( ) Reducing Diet.
( ) Varying the Monotony of Liquid and Soft Diets.
( ) Recipes for Anemia.
( ) Value of Edible Gelatine in Infant and Child Feeding.

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City ____________ State ____________

ATROPHY

"Maltose is indicated in very difficult feeding cases and in severe cases of malnutrition and atrophy. It is part of the routine in the treatment of chronic indigestion from fat. Carbohydrate indigestion is more frequently seen in cases fed on lactose or on cane sugar: in such cases maltose is indicated."

MEAD'S DEXTRI-MALTOSE

MEAD'S DEXTRI-MALTOSE is usually indicated for feeding difficult cases.

While all carbohydrates can cause nutritional disturbances, it has been shown that Mead's Dextri-Maltose is the form least likely to cause such disorders as fermentative diarrhoea, indigestion in infants, having a low tolerance for sugar.

It is because this carbohydrate is better tolerated by the majority of infants with an inclination to diarrhoea that it is used so extensively in cases where such a condition has been present.

This, coupled with the fact that it can be given sooner and in larger amounts in cases recovering from nutritional disturbances, is added assurance that satisfactory gains in weight will result with less danger of a return of the complaint.

From Text Books of over a decade

THE MEAD POLICY

Mead's infant diet materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

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EVANSVILLE, INDIANA

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Grand Island, Nebraska
Great Falls, Montana
Green Bay, Wisconsin
Hastings, Nebraska
Iowa City, Iowa
Kansas City, Missouri
Lincoln, Nebraska
Madison, Wisconsin
Mankato, Minnesota
Medford, Oregon
Minneapolis, Minn.
Minot, North Dakota
Oakland, California
Ogden, Utah
Oklahoma City, Okla.
Omaha, Nebraska
Pittsburg, Kansas
Pocatello, Idaho
Portland, Oregon
Pueblo, Colorado
Quincy, Illinois
Reno, Nevada
Rockford, Illinois
Salem, Oregon
Salt Lake City, Utah
Salina, Kansas
San Francisco, Calif.
Seattle, Washington
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THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, March, 1929 No. 3

TWO MALTBIE ACHIEVEMENTS

Send for liberal samples
Compound Syrup of Calcreose
THE MALTBIE CHEMICAL CO
100 Brown Coated Tablets Calcreose 4 Grains

Compound Syrup of
Calcreose
A tasty, effective creosote cough syrup that does not nauseate.

Tablets Calcreose
4 grains
Full creosote medication in a form which patients will tolerate.

which meet your therapeutic requirements!

CLINICAL experience during influenza epidemics demonstrated that Calcreose was of value in the treatment of pulmonary and intestinal complications.

The Tablets Calcreose 4 grs. contain 2 grs. of pure creosote combined with hydrated calcium oxide.

Each fluid ounce of Compound Syrup of Calcreose represents Calcreose Solution 160 minims (equivalent to 10 minims of pure creosote); Alcohol, 24 minims; Chloroform, approximately 3 minims; Wild Cherry Bark, 20 grains; Peppermint, Aromatics and Syrup q. s.

The MALTBIE Chemical Company,
Newark, New Jersey.

MALTBIE Calcreose

COLLEGE OF PHYSICIANS OF PHILADELPHIA LIBRARY
MAR 1 1929

A Suggestion to Professional Men

PROFESSIONAL men know that only years of training qualify one for his profession, and also that years of experience are necessary to produce good business judgment.

Your accumulation of years should be entrusted only to experienced hands.

The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY
Farnam at Seventeenth

EXCLUSIVELY for the use of physicians and dentists and governed by a committee of doctors . . . the auditorium of the Medical Arts Building is the scene of many interesting gatherings . . . lectures by distinguished speakers . . . brilliant social functions. This is but one of the many conveniences afforded by the Medical Arts Building, with its spacious offices and display rooms, attractive club room, tea room, and other unusual facilities. This is, indeed, the doctors' *own building!*

Floor plans will be gladly sent to any member of
the medical or allied professions upon request

MEDICAL ARTS BUILDING

GEORGE & COMPANY
City National Bank Bldg.

OMAHA

CELIAC DISEASE

"A non-laxative combination of dextrin and maltose is best adapted because it can be given in such large amounts as necessary to cover the caloric needs without producing fermentation, diarrhea and intoxication." - - - - - - -

MEAD'S DEXTRI-MALTOSE

WHILE celiac disease is met only occasionally in infant feeding, its stubborn resistance to treatment is well known.

This disease alternates between constipation and diarrhea, accompanied by intermittent vomiting, caused by a low acidity of the stomach.

The stools are characteristic of this particular type of indigestion, large, foul and bulky from undigested fat.

There is a marked intolerance for fats and, to a lesser extent, for carbohydrates.

Treatment then lies in the correction of the diet. The amount of fat must be lessened and the carbohydrate increased to make up this deficiency.

Mead's Dextri-Maltose is the indication in such cases because of its easier assimilation in cases of weakened digestive powers.

Because of its greater assimilation limits, it is used liberally by infant feeders in the case of well infants. This, because it offers the greatest insurance against the appearance of digestive disturbances.

From Text Books of over a decade

THE MEAD POLICY

Mead's infant diet materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & COMPANY
EVANSVILLE, INDIANA

The peep-holes of a mask restrict vision to a narrow area because of their narrow angle of view.

UNMASK

YOUR PATIENTS

Ordinary lenses are like a mask because you receive accurate images only in the center.

WHEN your patients are fitted with ordinary lenses they are, in a measure, masked. Clear and strain-free vision is possible only through a small portion near the center of each lens.

Practitioners have known that marginal astigmatic errors could be eliminated, but such lenses as would accomplish this have hitherto been available only with considerable loss of time and consequent annoyance.

Orthogons unmask your eyes by giving perfect vision to the extreme margins of the lenses.

Now in the ORTHOGON series, we have fully corrected lenses which may be obtained on prescription orders with the same service as ordinary lenses. Now you can prescribe lenses which completely translate your findings and give your patients precise correction over the entire vision range.

Unmask your patients with ORTHOGON lenses!

Riggs Optical Company

- *Quality Optical Products* -

Appleton, Wisconsin
Boise, Idaho
Butte, Montana
Cedar Rapids, Iowa
Chicago, Illinois
Council Bluffs, Iowa
Davenport, Iowa
Denver, Colorado
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Fond Du Lac, Wisconsin
Fort Dodge, Iowa
Fresno, California
Galesburg, Illinois
Grand Island, Nebraska
Great Falls, Montana
Green Bay, Wisconsin
Hastings, Nebraska
Iowa City, Iowa
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Madison, Wisconsin
Mankato, Minnesota
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Minneapolis, Minn.
Minot, North Dakota
Oakland, California
Ogden, Utah
Oklahoma City, Okla.
Omaha, Nebraska
Pittsburg, Kansas
Pocatello, Idaho
Portland, Oregon
Pueblo, Colorado
Quincy, Illinois
Reno, Nevada
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Salem, Oregon
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Salina, Kansas
San Francisco, Calif.
Seattle, Washington
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Sioux Falls, So. Dakota
Spokane, Washington
St. Louis, Missouri
St. Paul, Minnesota
Tacoma, Washington
Walla Walla, Wash.
Waterloo, Iowa
Wichita, Kansas

ANNUAL MEETING, OMAHA, MAY 14, 15, 16

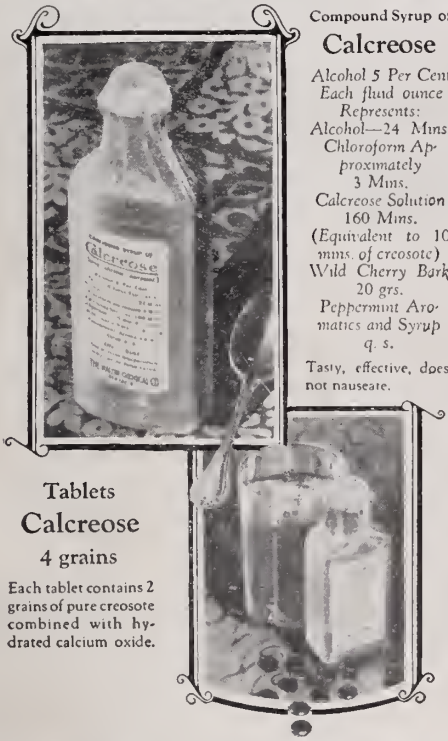
THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, April, 1929 No. 4

ACHIEVEMENTS

which meet your therapeutic requirements!



Compound Syrup of
Calcreose
Alcohol 5 Per Cent
Each fluid ounce
Represents:
Alcohol—24 Mins.
Chloroform Approximately
3 Mins.
Calcreose Solution
160 Mins.
(Equivalent to 10
mins. of creosote)
Wild Cherry Bark
20 grs.
Peppermint Aromatics and Syrup
q. s.
Tasty, effective, does not nauseate.

Tablets
Calcreose
4 grains
Each tablet contains 2 grains of pure creosote combined with hydrated calcium oxide.

WHEN Maltbie made Calcreose available for the treatment of Bronchitis, Tuberculosis, Intestinal and Urinary Affections, the medical profession was given a product through which the full therapeutic effect of creosote could be secured even though the patient may have a sensitive stomach.

Calcreose is a loose chemical combination of pure creosote and hydrated calcium oxide. The creosote is slowly released from Calcreose and this provides a prolonged and effective action which is very helpful. Leading druggists carry Tablets Calcreose 4 grs. and Compound Syrup of Calcreose for prescription purposes. Samples gladly mailed to Physicians.

Maltbie Chemical Company, Newark, New Jersey

MALTBIE
Calcreose

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OF PHILADELPHIA

A Suggestion to Professional Men

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Your accumulation of years should be entrusted only to experienced hands.

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PETERS TRUST COMPANY
Farnam at Seventeenth

Tempt the convalescent's appetite with appealing tidbits made from KNOX SPARKLING GELATINE

IN CHARTING the diet of the convalescent, the doctor has to make provision against monotony, often the chief obstacle to the patient's speedy recovery. Fickle appetites must be coaxed with a variety of pleasing and dietetically correct dishes. The use of Knox Sparkling Gelatine permits a number of refreshing variations from the standard menu. Not only does it break monotony. It contributes essential elements of nutrition. Each ounce contains 120 calories. This known food value is a material aid in making your dietary calculations.

In many other special diets, Knox Sparkling Gelatine can be employed to advantage. It is a pure protein, unbleached, unflavored, free from sugar. With diabetics, it increases protein content and gives the additional bulk needed to satisfy the patient's hunger. In the diet for anemia, it enables the doctor to introduce new and appetizing preparations of the inevitable liver. With infants, its colloidal ability reduces the formation of large curds, and so helps overcome regurgitation and vomiting. Gelatinated milk is more readily digested and absorbed. It is indicated where infants have colic or excessive gas formation, curdy stools, diarrhea or constipation.

QUALITY WITH ECONOMY

Knox Sparkling Gelatine is the highest quality for health. It is a protein in its purest form, particularly suitable where carbohydrates and acids must be avoided. When you purchase Knox Gelatine you not only get quality but economy, for each package makes four different desserts or salads of six generous servings each.

Let us send you these valuable booklets

Prepared by dietitians of recognized standing, they bring you much additional data on the medical value of Knox Sparkling Gelatine. Each is filled with tempting recipes. They are available to surgeons, doctors, dietitians and members of hospital staffs. May we send you copies? The coupon is for your convenience.

KNOX GELATINE LABORATORIES, 429 Knox Avenue, Johnstown, N. Y.

Please send me, without obligation or expense, the booklets which I have marked. Also register my name for future reports on clinical gelatine tests as they are issued.

☐ Diet in the Treatment of Diabetes
☐ Reducing Diet
☐ Varying the Monotony of Liquid and Soft Diets
☐ Recipes for Anemia
☐ Value of Edible Gelatine in Infant and Child Feeding

Name__________ Address__________

City__________ State__________

THE NIGHT CALL

MEAD'S

Mead's
Dextri-Maltose
For Infant Feeding

No. 1
With 2% Sodium Chloride for Normal Infants.

No. 2
Salt Free

No. 3
With 3% Potassium Bicarbonate for constipated Infants.

"The Night Call"—a reproduction 13¼ x 12" in color from the original suitable for framing will be sent on request.

FOR fifteen years this big man in the fur coat has been devoted to the call of service in his chosen profession. Fresh and determined from the medical school, he took over the old doctor's practice. At first it was said he never could, even in a small measure, compensate the community for its loss when the old doctor passed on. But time has proved that he could.

The old doctor imparted to the other some of his own wisdom, his own patient philosophy of life and service. The younger man, sensitive and a seer in his own right, builded on from his own experience through the practical application of his knowledge of medicine and the personal art of being human and humane.

So into his training passed the long discipline of study and preparation, together with that more rigorous responsibility to answer the summons when duty calls, whenever, wherever or for whatever the need may be.

He may watch for hours upon end without sleep, eat but little, relax never, yet no one hears him complain. No one thinks he ever becomes weary, or longs for a respite and so day or night, in season and out, when the telephone rings a voice carries back, "*This is the doctor. Yes, I will come.*"

MEAD JOHNSON & COMPANY
EVANSVILLE, INDIANA
Makers of Infant Diet Materials Exclusively

The peep-holes of a mask restrict vision to a narrow area because of their narrow angle of view.

Ordinary lenses are like a mask because you receive accurate images only in the center.

Orthogons unmask your eyes by giving perfect vision to the extreme margins of the lenses.

UNMASK
YOUR PATIENTS

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Now in the ORTHOGON series, we have fully corrected lenses which may be obtained on prescription orders with the same service as ordinary lenses. Now you can prescribe lenses which completely translate your findings and give your patients precise correction over the entire vision range.

Unmask your patients with ORTHOGON lenses!

Riggs Optical Company

- *Quality Optical Products* -

Appleton, Wisconsin
Boise, Idaho
Butte, Montana
Cedar Rapids, Iowa
Chicago, Illinois
Council Bluffs, Iowa
Davenport, Iowa
Denver, Colorado
Des Moines, Iowa
Eugene, Oregon
Fargo, North Dakota
Fond Du Lac, Wisconsin
Fort Dodge, Iowa
Fresno, California
Galesburg, Illinois
Grand Island, Nebraska
Great Falls, Montana
Green Bay, Wisconsin
Hastings, Nebraska
Iowa City, Iowa
Kansas City, Missouri
Lincoln, Nebraska
Madison, Wisconsin
Mankato, Minnesota
Medford, Oregon
Minneapolis, Minn.
Minot, North Dakota
Oakland, California
Ogden, Utah
Oklahoma City, Okla.
Omaha, Nebraska
Pittsburg, Kansas
Pocatello, Idaho
Portland, Oregon
Pueblo, Colorado
Quincy, Illinois
Reno, Nevada
Rockford, Illinois
Salem, Oregon
Salt Lake City, Utah
Salina, Kansas
San Francisco, Calif.
Seattle, Washington
Sioux City, Iowa
Sioux Falls, So. Dakota
Spokane, Washington
St. Louis, Missouri
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Walla Walla, Wash.
Waterloo, Iowa
Wichita, Kansas

ANNUAL MEETING, OMAHA, ELKS CLUB, MAY 14, 15, 16

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, May, 1929 No. 5

At this Season!
COMPOUND SYRUP OF Calcreose
THE MALTBIE CHEMICAL CO. NEWARK, N.J.
100 BROWN COATED TABLETS Calcreose 4 Grains

Each tablet Calcreose 4 grains contains 2 grains of pure creosote combined with hydrated calcium oxide.

Each fluid ounce Compound Syrup of Calcreose represents Alcohol – 24 mins., Chloroform approximately 3 mins., Calcreose Solution 160 mins. (Equivalent to 10 mins. of creosote), Wild Cherry Bark 20 grains, Peppermint, Aromatics and Syrup q. s.

SPRING COLDS are apt to hang on. When they are accompanied by stubborn coughs or bronchial affections, a good expectorant like Calcreose is just the remedy you need.

Two dosage forms of Calcreose are available. Calcreose Tablets, 4 grains, are preferable for the more serious coughs and in bronchitis and tuberculosis.

Compound Syrup of Calcreose will answer your requirements when a pleasant tasting, effective cough syrup is indicated. Liberal samples to physicians. The MALTBIE Chemical Co., Newark, N. J.

MALTBIE Calcreose

COLLEGE OF PHYSICIANS LIBRARY MAY 8 1929 OF PHILADELPHIA

A Suggestion to Professional Men

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PETERS TRUST COMPANY
Farnam at Seventeenth

50 DELICIOUS WAYS TO USE KNOX SPARKLING GELATINE IN THE DIABETIC DIET

THE recipes contained in the booklet, "Diet in the Treatment of Diabetes," make available a delightful variety of food combinations for the diabetic diet. Because of its recognized purity, and the fact that it is unbleached, unflavored, and free from sugar, Knox Sparkling Gelatine will be found especially valuable in bringing variety, palatability and nourishment to the prescribed diet.

The first part of the booklet carries a reprint of an article from *Modern Hospital* written by Lulu G. Graves, which discusses the new ideas in diabetic diets. As Miss Graves is Honorary President of the American Dietetic Association, and has specialized in diabetic diets, and has collaborated with leading diabetic authorities, she is well equipped to write advisedly on this all-important subject.

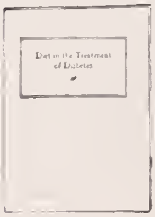
Knox Sparkling Gelatine blends perfectly with the foods commonly used in the diabetic diet, and the increased bulk helps satisfy the constant hunger of the diabetic patient. As each ounce of Knox Sparkling Gelatine contains about 120 calories, the doctors can circulate food formulas exactly. Necessary proteins are added to the diet. Indeed, experiments show that when gelatine is given to humans as the sole source of protein, the waste of body proteins often is reduced by as much as 63.7 per cent (Lusk).

QUALITY WITH ECONOMY

KNOX SPARKLING GELATINE is the highest quality for health. It is a protein in its purest form, particularly suitable where carbohydrates and acids must be avoided. When you purchase Knox Gelatine you not only get quality but economy, for each package makes four different desserts or salads of six generous servings each.

Additional dietetic booklets available

Listed below are other free booklets which are filled with tempting recipes for using Knox Sparkling Gelatine in the liquid and soft diet of invalids and convalescents, as well as the diet for anemia. A further booklet contains a wealth of data on gelatinated milk as used in child feeding. Check those you wish and mail us the coupon.



KNOX GELATINE LABORATORIES, 429 Knox Avenue, Johnstown, N. Y.

Please send me, without obligation or expense, the booklets which I have marked. Also register my name for future reports on clinical gelatine tests as they are issued.

☐ Diet in the Treatment of Diabetes
☐ Reducing Diet
☐ Varying the Monotony of Liquid and Soft Diets
☐ Recipes for Anemia
☐ Value of Edible Gelatine in Infant and Child Feeding

Name________________ Address________________

City________________ State________________

MEAD'S DEXTRI-MALTOSE in Any System of Infant Feeding—

Suggested Formulae for 24 Hour Feedings

* *

Fresh Cow's Milk

	Oz.
Mead's Dextri-Maltose	
Fresh Cow's Milk	
Water	

* *

Lactic Acid Milk

Mead's Dextri-Maltose	
Mead's Powdered Lactic Acid Milk	
Water	

* *

Protein Milk

Mead's Powdered Protein Milk	
Mead's Dextri-Maltose	
Water	

* *

Evaporated Milk

Mead's Dextri-Maltose	
Evaporated Milk	
Water	

THE greater known assimilation limits of Mead's Dextri-Maltose make this form of carbohydrate most acceptable to replace the deficiency found in all cow's milk and water formulae. This is true of any system of infant feeding.

For many years physicians have used it with good results in fresh cow's milk and water modifications. Yet within recent years the milk itself has undergone various modifications or alterations for the sake of preservation. In many cases these alterations have given definite advantages over fresh milk for different conditions in infant feeding.

Among such milks may be mentioned:

Powdered Lactic Acid Milk
Evaporated Milk
Powdered Milk
Powdered Protein Milk
Fresh Cow's Milk

The advantages following the use of Mead's Dextri-Maltose in fresh cow's milk and water mixtures will be present when this carbohydrate is used in any of the above milk mixtures.

Use it in these formulae as you do in the feedings prepared from fresh cow's milk and water. Its addition to the infant diet in any of these milks will meet with good clinical results in the majority of cases. Its known assimilation limits assure its absorption with a minimum tax upon the digestive tract of the infant. Freedom from nutritional disturbances has always been noticeable whenever it is used.

MEAD JOHNSON & COMPANY
Infant Diet Materials Exclusively
Evansville, Indiana, U. S. A.

Enjoy Refraction

There is nothing quite as capable of making refraction a sheer joy as the ability to examine the patient and to write the prescription without a tiresome wrangle with the trial case. How easy and impressive it is to rapidly diagnose the error with a retinoscope and then prove up with a few swift changes of lenses, while the patient looks at the chart . . . How irritating and utterly lacking in the appearance of professional skill is the long drawn out "this or that" encounter with the trial lenses! Refraction with the Refractascope is indeed a pleasure, for it has simplified retinoscopy, and has, at the same time, made it far more precise. . . . . *With each Refactascope, we give a course of lessons by the inventor of the instrument.* This is not available with any other streak light retinoscope.

RIGGS OPTICAL COMPANY

Quality Optical Products

Omaha, Nebr.
Denver, Colo.
Grand Island, Nebr.
Lincoln, Nebr.
Hastings, Nebr.
Kansas City, Mo.
Sioux City, Ia.

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, June, 1929 No. 6

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When Summer Comes

ENTERITIS and other intestinal disturbances during the summer months call for an efficient intestinal antiseptic.

EACH tablet Calcreose 4 grains contains 2 grains pure creosote combined with calcium hydroxide... a form of creosote that patients will tolerate.

Liberal sample to physicians for "summer ailments" test.

The Maltbie Chemical Co.
Newark, New Jersey

MALTBIE *Calcreose*

A Suggestion to Professional Men

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PETERS TRUST COMPANY
Farnam at Seventeenth

KNOX SPARKLING GELATINE IS VALUABLE IN THE DIETS OF INFANTS AND CHILDREN

WE HAVE published a booklet, "Value of Edible Gelatine in Infant and Child Feeding." It contains many valuable suggestions on the proportions and method of preparation for gelatine used in infant feeding, giving specific instances of results achieved with infants and growing children.

Knox Gelatine added to the milk formula largely prevents the formation of hard curds, and so helps to correct regurgitation and vomiting. It is more readily digested and absorbed. Dr. Downey, in his research work at Mellon Institute, determined that the addition of gelatine to the milk mixture materially increases its available nourishment.

Another important use of Knox Sparkling Gelatine is in the diabetic diet. Here it serves as a carrier of concentrated foods, adds to the protein content, and gives the patient a feeling of satiety when the meal is over. Dietitians use it to increase the variety of the liquid and soft diets of convalescents and invalids.

Back of the manufacture of Knox Sparkling Gelatine is 41 years of experience. From raw material to the finished package every process is under constant chemical and scientific control. Knox Sparkling Gelatine is a pure protein, unbleached, unflavored, free from sugar.

QUALITY WITH ECONOMY

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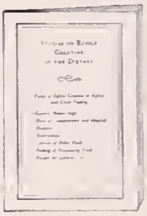
Further Booklets Available

Recognized dietitians have prepared these additional booklets which explain the uses of Knox Sparkling Gelatine in various illnesses. They offer a number of delicious and appetizing recipes which lend variety to the prescribed diets. Data on interesting scientific tests is also available. Simply check the coupon below and mail it to us.



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☐ Recipes for Anemia
☐ Value of Edible Gelatine in Infant and Child Feeding

Name____________ Address____________

City____________ State____________

CONSTIPATION

"The substitution of one of the maltose-dextrins mixtures for milk or cane sugar also sometimes relieves constipation in little babies.*** Those preparations which contain the potassium salts are apparently somewhat more laxative than those containing the sodium salts."

MEAD'S DEXTRI-MALTOSE

From Text Books of over a decade

MEAD'S DEXTRI-MALTOSE No. 3 (with potassium bicarbonate) is indicated for constipated babies. Potassium salts added to cow's milk cause the formation of a soft coagula and softer stools.

In human milk there is a preponderance of potassium over calcium salts, while calcium salts predominate in cow's milk. The calcium in cow's milk tends to cause the formation of large tough curds in which are enveloped large quantities of fat.

Sufficient potassium salts tend to overcome the preponderance of calcium resulting in a soft flocculent curd. By freeing the fat from its envelope of casein, it comes in more intimate contact with the digestive juices resulting in a better metabolism and softer stools.

THE MEAD POLICY

MEAD'S INFANT DIET MATERIALS *are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.*

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EVANSVILLE, INDIANA

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THE NEBRASKA STATE MEDICAL JOURNAL

SUUM CUIQUE

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, July, 1929 No. 7

All Through The Summer Months

Calcreose is the "stand-by" of many physicians when they require an intestinal antiseptic embodying the effectiveness of creosote.

Every physician reader of this Journal who is not familiar with the value of Calcreose in the treatment of enteritis and other intestinal disturbances during the summer months is invited to clip out and return the bottle opposite for liberal, complimentary test.

The MALTBIE Chemical Company, Newark, N. J.

MALTBIE Calcreose

100
BROWN COATED
TABLETS
Calcreose
4 Grains
Calcreose A powder containing approximately 80% creosote in chemical combination with calcium.
Adult Dose—2 to 4 tablets with a glass of water every two to four hours. Begin with small doses and increase until the maximum dose is reached.
THE MALTBIE CHEMICAL Co
NEWARK N J

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PETERS TRUST COMPANY
Farnam at Seventeenth

The newly recognized importance of *Vitamin B* in infant diet

That a **partial** deficiency of Vitamin B in infant diet produces symptoms similar to those produced by a **total** deficiency, is evident from recently published clinical observations.

These symptoms, observed by Hoobler in his recent studies of Vitamin B deficiency in infants, are

1. Anexoria
2. Loss of weight
3. Spasticity of arms and legs
4. Rigidity of neck
5. Restlessness and fretfulness.

Hoobler cites that the usual dietary of an infant in this country up to its third month is human milk or cow's milk, with the addition of sugar, possibly a milled cereal, orange juice and cod-liver oil.

On analysis, Vitamins A, C and D are found to be present in this diet. But only minimal and, in many cases, subminimal amounts of Vitamin B are to be found.

With the addition of Vitamin B to the diet Hoobler noted that after two weeks the infant had changed from a thin, pale, spastic, restless, whining child, refusing part of its food, to a happy, rosy cheeked, smiling baby whose appetite seemed never to be completely satisfied and whose gain in weight was remarkable.

He concludes, therefore, that "every infant should have an addition of Vitamin B to its diet and should not depend on milk, either human or cow's, as its only source of this vitamin."

The question naturally arises then, what shall be the source of supply of Vitamin B for the infant?

E. R. Squibb & Sons have answered this problem in the development of a new milk modifier which is exceedingly rich, not only in Vitamin B, but also in assimilable iron salts—Vitavose.

Squibb's Vitavose is a palatable and highly nutritious maltose-dextrin preparation, made from fat-free, malted wheat germs. In addition to maltose and dextrins, it contains the water-soluble extractives from the wheat embryo—Vitamin B, soluble nitrogenous compounds and mineral salts.

Vitavose resembles a fine golden yellow sugar in appearance. It has an agreeable malty taste. It is physiologically assayed for its vitamin content and tests show that it contains 100 times as much of the antineuritic factors as does fresh, raw, certified cow's milk, and about 30 times as much of the pellagra-preventing factor.

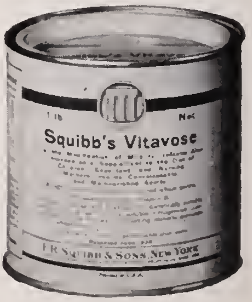
More Vitamin B with Vitavose in the diet of children and adults

Macy, Hoobler, Harris and others have published data which indicate that a very considerable number of people are subsisting on diets which are far from optimum with respect to Vitamin B.

This deficiency of Vitamin B is more profound during periods of marked physiological crisis such as pregnancy, lactation, rapid growth and convalescence.

Vitavose as a diet supplement brings the supply of Vitamin B and iron up to optimum requirements. It stimulates the appetite and has slightly laxative qualities which aid in elimination.

Vitavose has been accepted by the Council on Pharmacy and Chemistry, American Medical Association



FREE to physicians—*samples of Vitavose and detailed information.*
Write Professional Service Dept., E. R. Squibb & Sons, 80 Beekman Street, New York

SQUIBB'S VITAVOSE

Mead's Dextri-Maltose

THERE is a unanimity of opinion among physicians upon the use of Mead's Dextri-Maltose.

It is shared alike by the pediatrist whose practice is confined exclusively to the feeding of infants, and the general practitioner whose work covers a multitude of different cases.

An abundance of clinical evidence has proved it is well tolerated, easily assimilated and generally productive of satisfactory results. In combination with various cow's milk and water modifications it has probably *successfully* been used to feed more infants than any other carbohydrate offered the medical profession.

A few infants can tolerate *any* carbohydrate. But *any* carbohydrate can not be fed all babies under all conditions. The success characterizing the use of Mead's Dextri-Maltose in the combined experience of infant feeders is that it will successfully feed *more* infants than any other now in use.

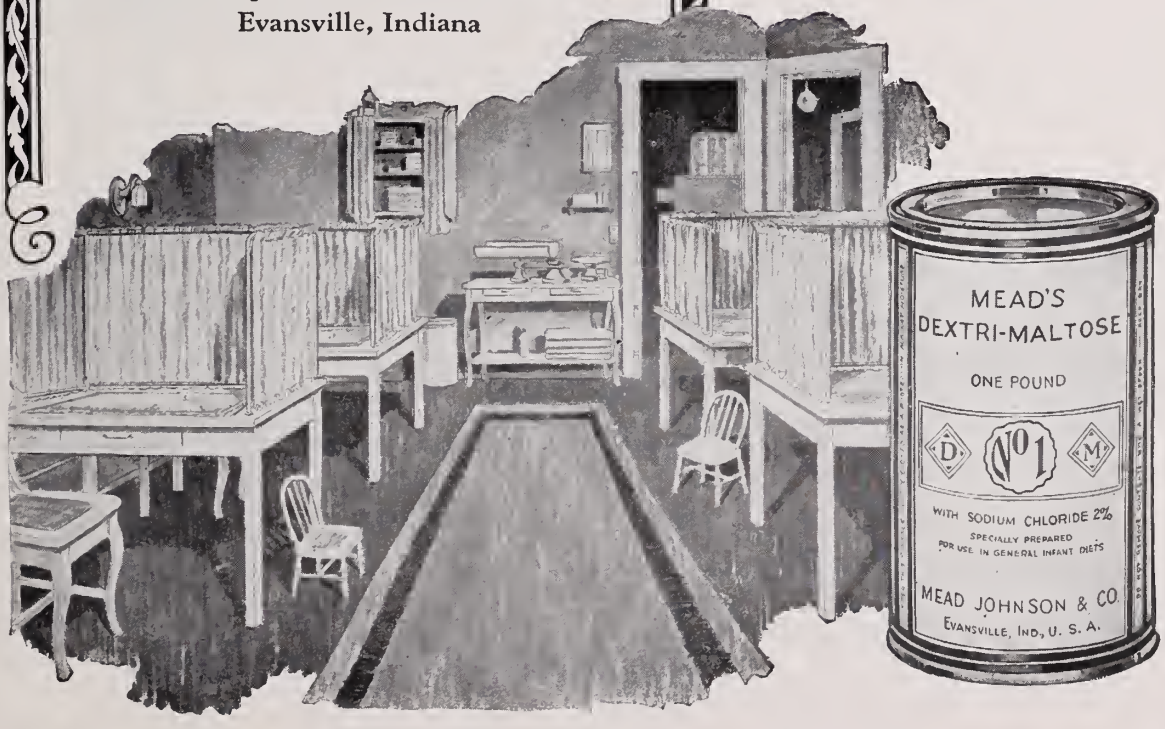
Sample and Literature on Request.

MEAD JOHNSON & CO.
Evansville, Indiana

MEAD'S

THE MEAD POLICY

MEAD'S infant diet materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.


MEAD'S
DEXTRI-MALTOSE
ONE POUND
D
No 1
M
WITH SODIUM CHLORIDE 2%
SPECIALLY PREPARED FOR USE IN GENERAL INFANT DIETS
MEAD JOHNSON & CO.
EVANSVILLE, IND., U. S. A.

Enjoy Refraction

There is nothing quite as capable of making refraction a sheer joy as the ability to examine the patient and to write the prescription without a tiresome wrangle with the trial case. How easy and impressive it is to rapidly diagnose the error with a retinoscope and then prove up with a few swift changes of lenses, while the patient looks at the chart . . . How irritating and utterly lacking in the appearance of professional skill is the long drawn out "this or that" encounter with the trial lenses! Refraction with the Refractascope is indeed a pleasure, for it has simplified retinoscopy, and has, at the same time, made it far more precise. . . . . *With each Refactascope, we give a course of lessons by the inventor of the instrument.* This is not available with any other streak light retinoscope.

RIGGS OPTICAL COMPANY

Quality Optical Products

Omaha, Nebr.
Denver, Colo.
Grand Island, Nebr.
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Hastings, Nebr.
Kansas City, Mo.
Sioux City, Ia.

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

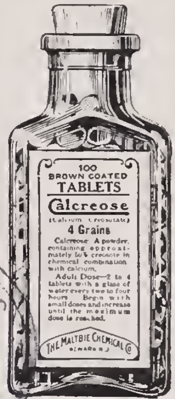
Vol. XIV Norfolk, Nebraska, August, 1929 No. 8

All Through The Summer Months

Calcreose is the "stand-by" of many physicians when they require an intestinal antiseptic embodying the effectiveness of creosote.

Every physician reader of this Journal who is not familiar with the value of Calcreose in the treatment of enteritis and other intestinal disturbances during the summer months is invited to clip out and return the bottle opposite for liberal, complimentary test.

The MALTBIE Chemical Company, Newark, N. J.



MALTBIE

Calcreose

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AUG 5 1929
OF PHILADELPHIA

A Suggestion to Professional Men

PROFESSIONAL men know that only years of training qualify one for his profession, and also that years of experience are necessary to produce good business judgment.

Your accumulation of years should be entrusted only to experienced hands.

The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY

Farnam at Seventeenth

WHEN A DIABETIC SAYS:

"What can I eat that tastes good?"

One of the problems in diabetes is to keep the patient diet-happy! And Knox Sparkling Gelatine can be of real service.

As you will note in the recipe below, Knox Gelatine combines perfectly with the foods prescribed for the diabetic diet. It makes dishes that are appetizing and *different* to the eye and the taste. It supplies the diet variety that satisfies the patient's appetite and it supplies the food-bulk that the patient's hunger craves.

People suffering from diabetes really enjoy gelatine dishes—and they *can* enjoy them if they have our diabetic recipes prepared by one of the country's recognized dietitians. Remember, Knox Gelatine is free from *sugar.*

KNOX *is the real* GELATINE

Contains No Sugar

WINTER SALAD *(Six Servings)*

	Grams	Prot.	Fat	Carb.	Cal.
2 teaspoons Knox Sparkling Gelatine	4.5	4	....	....	....
¼ cup cold water	....	....	....	....	....
½ cup hot water	....	....	....	....	....
½ teaspoon salt	....	....	....	....	....
¼ cup vinegar	....	....	....	....	....
1½ cups grated cheese	150	43	54	....	....
½ cup chopped stuffed olives	70	1	19	8	....
½ cup chopped celery	60	1	....	2	....
¼ cup chopped green pepper	25	....	....	1	....
⅓ cup cream, whipped	75	2	30	2	....
Total		51	103	13	1183
One serving		8.5	17	2	197

Soak gelatine in cold water. Bring water and salt to boil and dissolve gelatine in it. Add vinegar and set aside to chill. When nearly set, beat until frothy, fold in cheese, olives, celery, pepper and whipped cream. Turn into molds and chill until firm. Unmold on lettuce leaf and serve.

SPINACH SALAD *(Six Servings)*

	Grams	Prot.	Fat	Carb.	Cal.
1½ tablespoons Knox Sparkling Gelatine	10	9	....	....	....
¼ cup cold water	....	....	....	....	....
1¼ cups boiling water	....	....	....	....	....
2 tablespoons lemon juice	20	....	....	2	....
½ teaspoon salt	....	....	....	....	....
1½ cups cooked spinach, chopped	300	6	....	7	....
2 hard cooked eggs	100	13	10.5	....	....
Total		28	10.5	9	242.5
One serving		5	2	1.5	40

Soak gelatine in cold water and dissolve in boiling water. Add lemon juice, salt, strain and chill. When nearly set, stir in chopped spinach, mold and chill until firm. Serve on lettuce hearts or tender chicory leaves and garnish with hard cooked egg, cut lengthwise in sixths and sprinkled with paprika. Serve with mayonnaise.

If you agree that recipes like the ones on this page will be helpful in your diabetic practice, write for our complete Diabetic Recipe Book—it contains dozens of valuable recommendations. We shall be glad to mail you as many copies as you desire. Knox Gelatine Laboratories, 429 Knox Ave., Johnstown, N. Y.

Name..*Address*..*City*................................ *State*......................

Sound weight and muscle on MEAD'S DEXTRI-MALTOSE

MEAD'S Dextri-Maltose, cow's milk and water can, with but few exceptions, be relied upon for good results in artificial feeding cases.

The addition of Dextri-Maltose makes up the carbohydrate deficiency in the cow's milk. It is easily assimilated—well tolerated.

Gains in weight are usually normal, presenting a healthy clinical picture—sound musculature—good color.

There is a minimum of nutritional disturbances of a fermentative nature due to the greater assimilation limits of Dextri-Maltose over either lactose or sucrose.

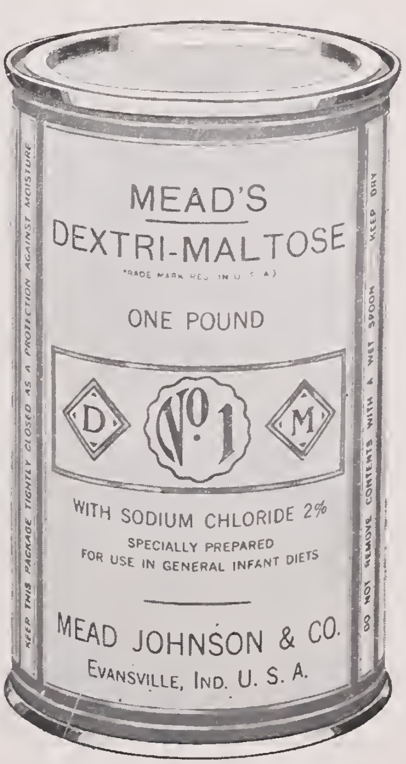
Dextri-Maltose No. 1 is indicated for normal infants, while the No. 3 with 3% addition of potassium bicarbonate, is the clinical choice if calcium constipation is present.

These observations are made from the results obtained in hospitals, in clinics and from many physicians in private practice.

THE MEAD POLICY

Mead's infant diet materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & CO.
Makers of Infant Diet Materials
EVANSVILLE, INDIANA, U. S. A.


MEAD'S
DEXTRI-MALTOSE
TRADE MARK REG. IN U. S. A.
ONE POUND
D
No. 1
M
WITH SODIUM CHLORIDE 2%
SPECIALLY PREPARED
FOR USE IN GENERAL INFANT DIETS
MEAD JOHNSON & CO.
EVANSVILLE, IND. U. S. A.
KEEP THIS PACKAGE TIGHTLY CLOSED AS A PROTECTION AGAINST MOISTURE
DO NOT REMOVE CONTENTS WITH A WET SPOON KEEP DRY

MODERN LIGHT
Demands Eye Protection

Throughout our waking and working hours our eyes are continuously subject to the glare of modern light. Nature provides a means of protection from strong natural light coming from above the eye level, but severe eyestrain is caused by the glare that surges up from white pavements, shiny papers and low-hung or poorly shaded lamps.

On the streets, at the desk, in the home—at work or at play—Glare, insidious enemy of eyes, is always with us. Modern light makes glare-protection necessary.

Soft-Lite Glass, available in all lens forms, is the best and safest of all protective glasses. It satisfies the demand of the modern refractionist better than any other lens material. It reduces the light intensity to a point of comfort, but it does not alter the natural color values.

A trial prescription always proves the merit of Soft-Lite.

RIGGS OPTICAL COMPANY

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Sioux City, Ia.

Quality Optical Products

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, September, 1929 No. 9

ACHIEVEMENTS

Compound Syrup of Calcreose

Alcohol 5 Per Cent
Each fluid ounce Represents:
Alcohol—24 Mins.
Chloroform Approximately 3 Mins.
Calcreose Solution 160 Mins.
(Equivalent to 10 mins. of creosote)
Wild Cherry Bark 20 grs.
Peppermint Aromatics and Syrup q. s.

Tasty, effective, does not nauseate.

Tablets Calcreose 4 grains

Each tablet contains 2 grains of pure creosote combined with hydrated calcium oxide.

which meet your therapeutic requirements!

WHEN Maltbie made Calcreose available for the treatment of Bronchitis, Tuberculosis, Intestinal and Urinary Affections, the medical profession was given a product through which the full therapeutic effect of creosote could be secured even though the patient may have a sensitive stomach.

Calcreose is a loose chemical combination of pure creosote and hydrated calcium oxide. The creosote is slowly released from Calcreose and this provides a prolonged and effective action which is very helpful. Leading druggists carry Tablets Calcreose 4 grs. and Compound Syrup of Calcreose for prescription purposes. Samples gladly mailed to Physicians.

Maltbie Chemical Company, Newark, New Jersey

MALTBIE *Calcreose*

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SEP 3 1929
OF PHILADELPHIA

A Suggestion to Professional Men

PROFESSIONAL men know that only years of training qualify one for his profession, and also that years of experience are necessary to produce good business judgment.

Your accumulation of years should be entrusted only to experienced hands.

The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY
Farnam at Seventeenth

SAFE *and* **SANE DIETING**

. . . *in* **WEIGHT**

REDUCING! . . .

When weight reduction is advisable (*and a nerve-racking, unsatisfied appetite is inadvisable*)—then Knox Sparkling Gelatine may be used with gratifying results.

Knox Gelatine is beneficial protein—a wholesome delicacy that may be delightfully combined with vegetables, fruits, chicken and other foods in the weight reducing diet. There are Knox Gelatine salads, mousses and desserts which are well balanced dietetically but of low calorific value, *and will satisfy the most persistent craving for food.*

Knox Gelatine supplies the diet *bulk* that satisfies hunger—and the diet *variety* that appeases the appetite. Only Knox Gelatine should be used, because it is real gelatine in its purest form—unbleached, unflavored and unsweetened.

May we send you gelatine reducing recipes, specially prepared by recognized dietetic authorities? They will help you in your practice. Our other laboratory material is available also if you will return the coupon below. We should appreciate the opportunity of sending you the newest findings concerning the importance of gelatine in medical practice.

KNOX GELATINE LABORATORIES
429 Knox Avenue, Johnstown, N. Y.

Please send me, without obligation or expense, the booklets which I have marked. Also register my name for future reports on clinical gelatine tests as they are issued.

☐ Diet in the Treatment of Diabetes
☐ Reducing Diet
☐ Varying the Monotony of Liquid and Soft Diets
☐ Recipes for Anemia
☐ Value of Gelatine in Infant and Child Feeding

Name ....
Address ....
City ....
State ....

KNOX *is the real* **GELATINE**

Contains No Sugar

"But Doctor, You don't treat many *sick* babies."

To the woman pictured in this interview, it somehow seemed that in a case of artificial feeding, intestinal disturbances were an inevitable necessity—that these were dread diseases which in some vague, mysterious manner, baffled all efforts to prevent and whose correction lay in the drastic administration of drugs.

MEAD'S DEXTRI-MALTOSE
Samples on Request

This remark was made by a mother, with her infant in her arms, as she discussed her own case with her physician. Paradoxically enough, because her physician was a successful infant feeder, he gave promise to lose standing in her estimation.

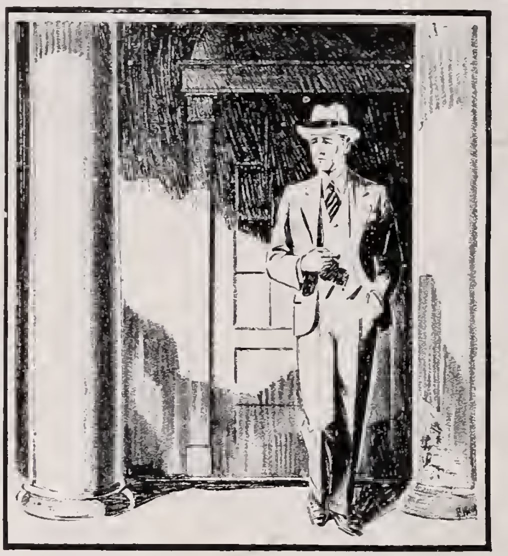
The Doctor's reply was illuminating to this mother—"*We don't treat many sick babies because we feed more well babies properly.*"

So modern feeding practice seeks first to preserve the infant's health rather than correct nutritional disturbances. And in this it is eminently successful. What this patient did not realize was that the physician needed her confidence and co-operation.

The dangers of carbohydrate fermentation are greatly minimized, weight gains with sound body turgor are easier to secure by the use of Mead's Dextri-Maltose in fresh cow's milk or lactic-acid milk mixtures.

It is readily assimilated by the infant and is supplied the doctor with different salt contents. No. 1 with sodium chloride 2% for normal cases, No. 2, salt free and No. 3 with 3% Potassium Bicarbonate for constipated infants.

MEAD JOHNSON & COMPANY
EVANSVILLE, INDIANA U. S. A.
INFANT DIET MATERIALS EXCLUSIVELY



MODERN LIGHT
Demands Eye Protection

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RIGGS OPTICAL COMPANY

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Quality Optical Products

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, October, 1929 No. 10

TWO MALTBIE ACHIEVEMENTS

Send for liberal samples
Compound Syrup of Calcreose
Calcreose
100 Brown Coated Tablets Calcreose 4 Grains

Compound Syrup of
Calcreose
A tasty, effective creosote cough syrup that does not nauseate.

Tablets Calcreose
4 grains
Full creosote medication in a form which patients will tolerate.

which meet your therapeutic requirements!

CLINICAL experience during influenza epidemics demonstrated that Calcreose was of value in the treatment of pulmonary and intestinal complications.

The Tablets Calcreose 4 grs. contain 2 grs. of pure creosote combined with hydrated calcium oxide.

Each fluid ounce of Compound Syrup of Calcreose represents Calcreose Solution 160 minims (equivalent to 10 minims of pure creosote); Alcohol, 24 minims; Chloroform, approximately 3 minims; Wild Cherry Bark, 20 grains; Peppermint, Aromatics and Syrup q. s.

The MALTBIE Chemical Company,
Newark, New Jersey.

MALTBIE *Calcreose*

COLLEGE OF PHYSICIANS
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OF PHILADELPHIA

A Suggestion to Professional Men

PROFESSIONAL men know that only years of training qualify one for his profession, and also that years of experience are necessary to produce good business judgment.

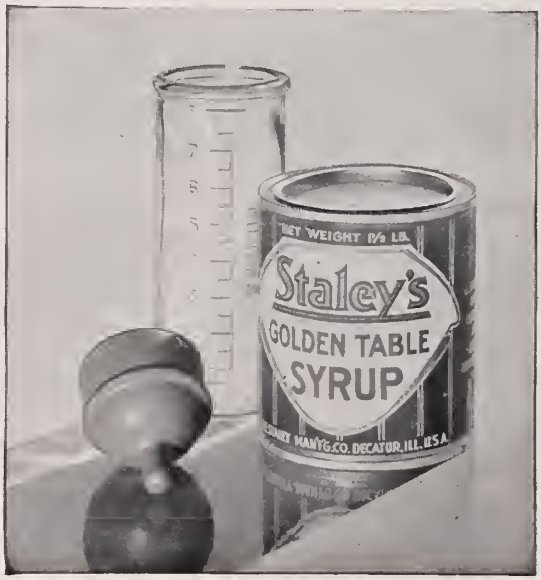
Your accumulation of years should be entrusted only to experienced hands.

The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY

Farnam at Seventeenth

It answers
every essential requirement
of a syrup
for infant feeding



DOCTORS cannot afford to take chances on an inferior grade of corn syrup when it is to be used in the preparation of food for infants.

Staley's Corn Syrup is used successfully for this purpose by doctors all over the country, as well as in many hospitals and clinics.

A careful process of manufacture gives this syrup purity, uniformity and clearness. These, combined with its 28.5% dextrose and maltose content—the same sugars found in expensive baby foods—make it ideally suited for infant feeding.

Staley's Crystal White and Golden Corn Syrup—the kinds recommended for this use—can be purchased at any grocery.

Write today for free sample and the booklet, "Modification of Milk for Infant Feeding."

Staley Sales Corporation
Decatur, Illinois

"But Doctor, You don't treat many *sick* babies."

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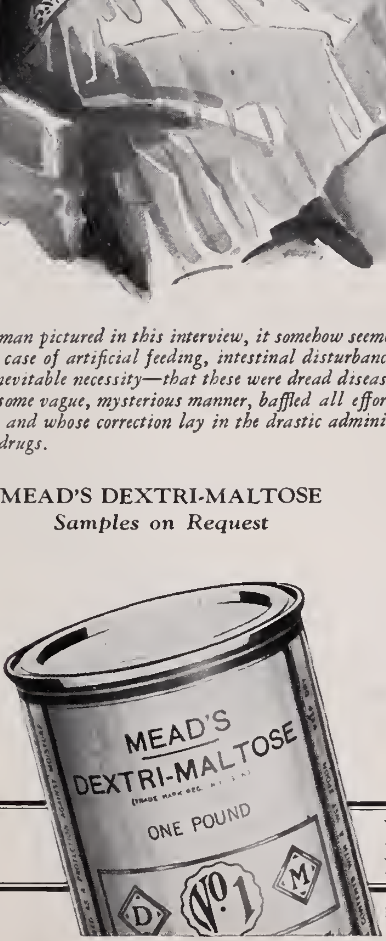

MEAD JOHNSON & COMPANY
EVANSVILLE, INDIANA U. S. A.
INFANT DIET MATERIALS EXCLUSIVELY

Just a Prescription

A prescription for glasses is, in a way, a rather insignificant thing. Often it is written in a seemingly careless manner, and on a form not at all impressive.

A few figures, some plus or minus signs, crosses and circles over printed words—that's all. Some might call it a "scrap of paper"!

There is, though, buried deep in this prescription something rather vital. Through the use of the lenses indicated, strained and aching eyes may be relieved or vision extended; to the wearer the world may become more cheerful and interesting, or clearer and brighter.

And behind the prescription is experience and the ability to diagnose; experience not gained in a day and ability not easily acquired.

But is the patient completely served when the prescription is written? —No, not until the knowledge and skill of the refractionist is translated into finished lenses. Unless the prescription is correctly filled—precise in focus and exact in axis—justice is done neither to patient nor practitioner.

Are your patients completely served? Are you guarding the eyes of the patient and protecting your reputation, or are you letting the matter of a few cents turn you toward doubtful quality and slip-shod methods?

Riggs Optical Company has been serving an exacting clientele for over twenty years. In that time they have built up an enviable reputation. They have never deviated from their original purpose of selling the highest quality products and producing best possible prescription service.

In giving relief and vision to your patient turn to the reliable prescription house for completing the responsibility.

RIGGS OPTICAL COMPANY

Omaha, Nebr.
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THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, November, 1929 No. 11

TWO MALTBIE ACHIEVEMENTS

Send for liberal samples
Compound Syrup of Calcreose
A tasty, effective creosote cough syrup that does not nauseate.
Tablets Calcreose
4 grains
Full creosote medication in a form which patients will tolerate.

which meet your therapeutic requirements!

CLINICAL experience during influenza epidemics demonstrated that Calcreose was of value in the treatment of pulmonary and intestinal complications.

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The MALTBIE Chemical Company,
Newark, New Jersey.

MALTBIE Calcreose

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A Suggestion to Professional Men

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The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY
Farnam at Seventeenth

PARKE, DAVIS AND COMPANY

The Prenatal and Postnatal Use of

PARKE, DAVIS & CO.'S

VIOSTEROL

(Irradiated Ergosterol in Oil)

[Licensed under the Steenbock patent administered by the Alumni Research Foundation of the University of Wisconsin]

The urgent need for ionizable calcium in pregnancy due to the demands of the growing fetus, suggests the systematic use during this period of a medicinal agent capable of influencing calcium metabolism. Such an agent is Viosterol, P. D. & Co., standardized to an antirachitic (Vitamin D) potency one hundred times that of high-grade cod-liver oil.

The need for such support continues after birth, to assist the bony growth of the child. Not only may Viosterol, P. D. & Co., be given to the infant, the effective dose being very small, but also to the nursing mother to enhance the bone-building value of her milk.

It is true that vitamin D does not add to the store of calcium in the body, but it does most decidedly stimulate the synthesis of bone by bringing together for organic union its essential elements, calcium and phosphorus.

Viosterol, P. D. & Co., is put up in 5-cc. and 50-cc. packages, with a standardized dropper which delivers approximately 3 drops to the minim.

Viosterol, P. D. & Co., has been accepted for inclusion in N. N. R. by the Council on Pharmacy and Chemistry of the A. M. A.

PARKE, DAVIS & COMPANY

DETROIT, MICHIGAN

NEW YORK KANSAS CITY CHICAGO BALTIMORE NEW ORLEANS MINNEAPOLIS SEATTLE

In Canada: WALKERVILLE MONTREAL WINNIPEG

MEAD'S POLICY

MEAD'S INFANT DIET MATERIALS ARE ADVERTISED ONLY TO PHYSICIANS• NO FEEDING DIRECTIONS ACCOMPANY TRADE PACKAGES • INFORMATION IN REGARD TO FEEDING IS SUPPLIED TO THE MOTHER BY WRITTEN INSTRUCTIONS FROM HER DOCTOR WHO CHANGES THE FEEDINGS FROM TIME TO TIME TO MEET THE NUTRITIONAL REQUIREMENTS OF THE GROWING INFANT• LITERATURE IS FURNISHED ONLY TO PHYSICIANS•

FROM the beginning, Mead Johnson & Company have cooperated only with physicians, never advertising to the public, never enclosing descriptive literature with packages, never printing directions on packages, nor exploiting the medical profession in any way. For years, we have thrown all our resources in research, money and honor into keeping infant feeding where it belongs—in the hands of the physician. ¶ If, in this day of commercial meddling and gratuitous medical advice, the Mead policy is in the interest of the medical profession's own future, should it not have your whole-hearted active as well as passive support? Your use of Dextri-Maltose and other Mead products reflects your approval of this policy. Is it worth your while?

MEAD JOHNSON & CO., Evansville, Ind., U. S. A.—*the strictly ethical house*

What It Can Do — for You!

The new Bausch & Lomb Stereo Campimeter provides the following procedures:

Central and para-central field studies, using the Lloyd campimetric chart with BINOCULAR fixation.

Central and para-central field studies with MONOCULAR fixation; the septum of the instrument being swung to one side permitting an extended nasal area.

Stereoscopic fusion training and muscular exercises—a new and very practical application for which a series of glass slides have been designed. (These slides may also be used on the previous models of the Stereo Campimeter.)

The New B&L Stereo Campimeter, and it is easily the most versatile ophthalmic instrument on the market today. The new stereo campimeter has all of the features of the original device, yet its field has been extended so that these original features have been amplified and other important ones added. The new construction has been accomplished without increasing bulk or altering the precision or ease of operation.

The New B&L Stereo Campimeter is a most valuable addition to the equipment of every office, but it cannot be classed as an "added accessory" for its function is a vital one to refractive routine. The information it gives is so necessary to precise and successful eye work.

Bausch and Lomb are supplying us with a new booklet describing the New Stereo Campimeter. If you wish a copy, send in the coupon below.

RIGGS OPTICAL COMPANY

60 West Superior Street
Chicago, Illinois.

Flood Building
San Francisco, Calif.

Gentlemen:

Please send me a copy of the Bausch and Lomb booklet describing the new B&L Stereo Campimeter. There is no obligation implied in this request.

NAME________________________________

ADDRESS______________________________

CITY________________STATE________________

SYMPOSIUM ON UROLOGY

THE NEBRASKA STATE MEDICAL JOURNAL

ESTABLISHED 1916 BY THE NEBRASKA STATE MEDICAL ASSOCIATION

Vol. XIV Norfolk, Nebraska, December, 1929 No. 12

Compound Syrup of Calcreose

Available for the lesser ailments of the respiratory tract . . . a tasty, effective cough syrup that does not nauseate . . . each fluid ounce representing Calcreose Solution, 160 minims; Alcohol, 24 minims; Chloroform, approximately 3 minims; Wild Cherry Bark, 20 grains; Peppermint, Aromatics and Syrup q. s.

The foundation of Calcreose is creosote—obtained from the wood of selected trees.

Tablets Calcreose four grains

Each Tablet Calcreose 4 grains, contains 2 grains pure creosote combined with hydrated calcium oxide. The full expectorant action of creosote is provided in a form which patients will tolerate.

THE MALTBIE CHEMICAL CO.
Newark, New Jersey

"I think that I shall never see . . . A poem lovely as a tree . . . Poems were made by fools like me . . . But only God can make a tree." —*Joyce Kilmer*

MALTBIE
Calcreose

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OF PHILADELPHIA

A Suggestion to Professional Men

PROFESSIONAL men know that only years of training qualify one for his profession, and also that years of experience are necessary to produce good business judgment.

Your accumulation of years should be entrusted only to experienced hands.

The Trust Department of this company is directed by qualified men who will be glad to advise you without charge.

PETERS TRUST COMPANY
Farnam at Seventeenth

Number 37 of a series of advertisements in national magazines addressed to the laity and setting forth some of the accomplishments of Medical Science in the diagnosis, treatment, and prevention of disease.

"God rest ye, little children, let nothing you affright."

The story of a great Christmas Gift

Lighted tapers in the hands of child carollers gleamed through the gentle snow. Small voices hymned Mulock's ancient and luminous assurance. "God rest ye, little children." Through Berlin's dimlit Ziegelstein Strasse, that Christmas night in 1891, the spirit of peace seemed to rest upon all God's creatures.

Yet, only a few steps away from the happy singers, in Bergman clinic, a little girl lay gravely ill of diphtheria.

Suddenly through the snow and the music hurried the famous scientist, Emil August Behring—preoccupied, tense, fully aware that the mission he was about to fulfill might prove to be an epoch-making one.

Entering the sick room, the bearded scientist bent over the suffering child, deftly passed a hypodermic needle under her skin—and injected the first dose of diphtheria antitoxin ever given. The little girl recovered.

What a happy Christmas gift for this child and for all the children to come after her! After years of tireless effort and many bitter disappointments, Behring in Germany, Roux in France, and other devoted scientists had discovered in this antitoxin a sure method, not only of *curing* diphtheria, but of rendering children *immune* to it.

A heritage that all can share

Less than two months after Behring's announcement was made to a scientific congress at Budapest, Parke, Davis & Company began the manufacture of diphtheria antitoxin in America. During succeeding years, we have been steadily improving the quality and effectiveness of this life-saving serum.

Through the preparation of many serums, antitoxins and vaccines for the prevention of disease, Parke, Davis & Company have been privileged to play a vital part in the never-ending task that faces medical science in guarding life and health.

And nothing in our work has given us greater satisfaction than the knowledge that we have helped to lift the shadows of illness and pain from the lives of little children.

PARKE, DAVIS & CO.

The world's largest makers of pharmaceutical and biological products

Nine out of ten mothers can give their babies the breast. What can the physician tell these mothers who want to wean their babies before they nurse them?

Types of Mothers and Their Infant-Feeding Problems

1. The Business-Going Mother

"Doctor, I will have to give up nursing my baby. Our expenses have been very heavy lately and I must go back to business. My position is open for me provided I go back next week."

"Of course, you know, Mrs. Rush, that breast milk is best for your baby. In every way, it is far ahead of the best formula. It is free from bacteria and dirt, it never sours, it is always correct in temperature, and quicker as well as cheaper than bottles. I haven't much respect for the mother who won't nurse her baby. Your case is perhaps more excusable, for at least you have nursed your baby up to the point where the economic shoe is pinching pretty tight."

Doctor, in situations like this, where extenuating circumstances make artificial feeding necessary, we hope you will consider Mead's Dextri-Maltose modification of cow's milk as the next-best-to-mother's-milk infant food. We hope you will be influenced in its choice, not only because of its long clinical background but because of the ethical character of its makers.

MEAD JOHNSON & CO., Evansville, Ind., U. S. A.—*the strictly ethical house*

Your Patrons *appreciate precision*

THE PUBLIC is educated to maximum service. This is an era of service. When your patients are informed that better lenses are available they appreciate having the merits of such lenses explained and demonstrated. When you urge the purchase of Orthogon precision lenses you indicate an interest in utmost eye comfort; a desire to more completely translate your findings into an effective prescription. When you write "Orthogon" on the Rx you are giving better service and increasing your prestige.

The Orthogon series of lenses is not a new product designed to sell merely as "improved merchandise". These lenses are the result of years of study and experiment originating in the desire of advanced refractionists for ideal ophthalmic lenses.

Your prescriptions in Orthogon are filled promptly by all Riggs houses. Riggs is located conveniently in 54 western and mid-western cities.

RIGGS
OPTICAL COMPANY
Quality Optical Products

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JAN 3 1964	

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